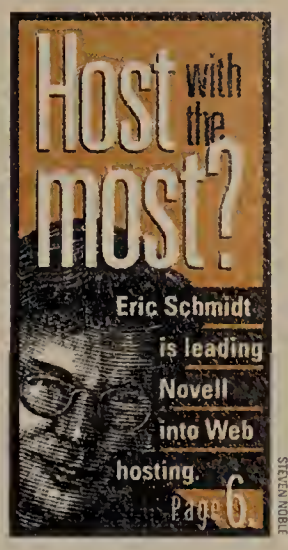
IP MULTICAST MOMENTUM Vendors' new products address security, management concerns. Page 8.

BIG SPENDERS It was a wild week of big money network industry acquisitions for Akamai, Lucent and others. Page 9.

The newsweekly of enterprise network computing

NetworkWorld



February 14, 2000 Volume 17, Number 7

The network portal: www.nwfusion.com

Is rock 'n roll bad for your net?

BY CAROLYN DUFFY MARSAN

As more Internet users tune in to music-oriented Web sites, corporate network managers are starting to see bandwidth problems caused by the downloading and sharing of oversized music files.

See **Music,** page 96

VAL MINA

CEO chops Cabletron into four chunks

BY JIM DUFFY

ROCHESTER, N.H. — Cabletron last week said it will split itself into four independent operating companies, ending a reorganization that began with the resignation of founder and CEO Craig Benson last spring.

The companies — Riverstone Networks, Enterasys Networks, Global Network Technology Services (GNTS) and Aprisma Management Technologies — will focus on service provider, enterprise network, professional services and network management markets, respectively. Cabletron will operate as a holding company for the four units, which will be taken public within the next year.

See **Cabletron**, page 9

Web attackers run roughshod

BY SANDRA GITTLEN, ELLEN MESSMER AND DENISE PAPPALARDO

Last week's unprecedented series of attacks on top e-commerce and news Web sites appeared to have waned by the weekend, but industry experts warned that there's no easy way to prevent such attacks from happening again.

The unknown aggressor or aggressors attacking Amazon.com, CNN.com, eBay and

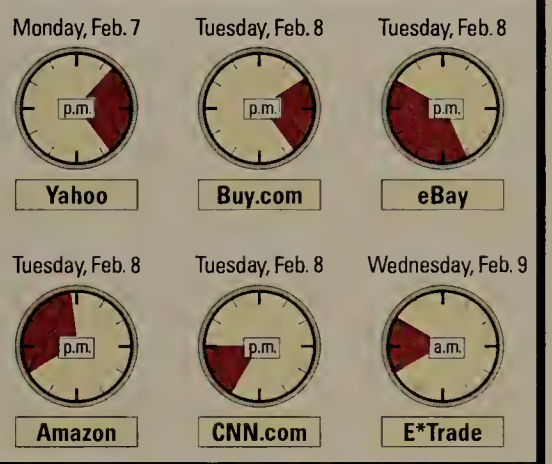
See **Attack**, page 10

Dot-coms come under fire

Denial-of-service attacks temporarily interrupted service at a handful of high-profile Web sites last week.

* Shaded areas show length of attacks. All times are E.S.T.

SOURCE: WIRE REPORT



Intel loads net cannon

BY APRIL JACOBS

PALM SPRINGS, CALIF. — The products Intel will announce at its Developer Forum this week should clear up any doubts that the company is becoming a network force to be reckoned with.

Ripe with acquired and home-grown technology, the company will announce communications products for

See **Intel**, page 93

Newspaper $5.00

S20

First on the Windows 2000 block

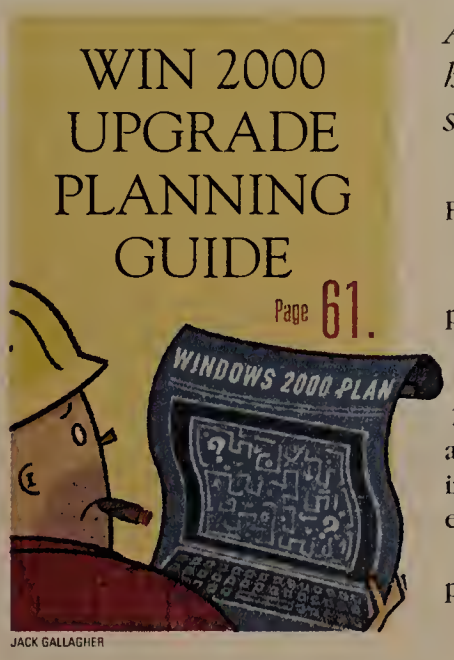
Merrill Lynch leaning on Active Directory to manage Cisco network.

BY JIM DUFFY

PRINCETON, N.J. — Investment giant Merrill Lynch is upgrading to Windows 2000 to take advantage of Active Directory and the technology's ability to policy manage the firm's Cisco network, including its IP telephony system.

Merrill Lynch is hoping that

See **Merrill**, page 94



JACK GALLAGHER

Active Directory worth hassle; Terminal Server surprises, users say.

BY JOHN FONTANA

This week, while most enterprise customers are cracking the seals on their first copies of the final code for Windows 2000, a few hearty souls already are running the operating system in their production environments.

Pioneers to some, guinea pigs to others, these early

See **Win 2000**, page 94

streetwear

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NetworkWorld Fusion
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NetworkWorld

FEBRUARY 14, 2000

THIS WEEK ONLINE

Keeping Current. Let the carpetbagging begin! Site managers were hunkered down in foxholes last week trying to ward off denial-of-service attacks that were assaulting the Internet's largest sites. But as they crawl out of the foxholes this week, they will be greeted by unsavory types. Beware — many vendors will claim they have fixes for what ailed the victims last week. But chances are, it's just snake oil. **DocFinder: 6840.**

DoS resources. What is a denial-of-service attack? What's the difference between Trin00 and Tribal Flood Network? What's the latest from the FBI on these types of network assaults? Check out our DoS attack research area and you'll find primers, white papers, advisories from CERT and the FBI, as well as up-to-the-minute news about last week's attacks. **DocFinder: 6836.**

MSPs? We've all heard the buzz about application service providers, but what about management service providers (MSP)? It seems that a new breed of company is cropping up to handle your network stresses. One such company, named Inteq, offers subscription-based services that monitor, measure and track customer networks. Find out more about MSPs from Features Managing Editor Amy Schurr in this week's Water Cooler. **DocFinder: 6841**

Switching secrets. Learning about switching can be a daunting task, but we've compiled the resources to help you. Start out with a primer on LAN switching from Bitpipe, and then move into details about multilayer switching from TechFest. After that, you'll be ready to move on to Cisco's array of technical tips and a series of "How switching works" papers from Intel. Finally, make sure you sign up for our High-Speed LANs newsletter to keep you up-to-date on the latest products and trends in switching. **DocFinder: 6842**

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WIN 2000 UPGRADE PLANNING GUIDE

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FEATURE: Hugh Anderson of The Hartford is using XML to create a real-time insurance application. **Page 65.**

FEATURE: Experimental high-speed Internet backbones show mixed results. **Page 67.**

REVIEW: Which antispam software cuts the mustard? **Page 71.**

Hugh Anderson of The Hartford

NEWS BRIEFS, FEBRUARY 14, 2000

Microsoft on a wire

You've seen the firm in court, it's wowed you on your PC, now Microsoft wants to invade the wires to your house. Microsoft last week said it would take an equity stake in Itran Communications, which makes hardware and software that lets data be transmitted through home power lines. The deal moves Microsoft further into the home network market, which involves linking multiple PCs within the home plus connecting "smart" appliances, such as refrigerators and microwave ovens that feature Web access. Microsoft said it will collaborate with Itran to develop software to transmit data through electrical wires that are already in homes.

Speaking of companies that spend a lot of time in court . . .

With the settling of securities litigation behind it, Informix might well have hoped legal woes were a thing of the past. Oh well. IBM filed a patent infringement suit against Informix last week saying it violated six patents dealing with database software as well as software for distributed processing and data compression technology. IBM said it had been in discussion with Informix for more than a year relating to the alleged patent infringements in an attempt to initiate talks about Informix licensing the disputed IBM technology, as well as compensating IBM for its use in the past — to no avail.

McCaw to play Iridium's white knight

Craig McCaw has assembled a team of investors to rescue the Iridium satellite telephone and paging venture with $74.6 million in interim financing, Iridium says. The firm has requested the U.S. Bankruptcy Court for the Southern District of New York to approve the financing to keep Iridium running past Feb. 15, when its current debts come due. Iridium, which runs a network of 66 low-earth orbit satellites, defaulted on two loans in August, which forced the company to file for bankruptcy protection that month.

Cross comes out with URL pen

For those tired of having to retype long and cumbersome URLs that appear in print, the Cross Pen company may have the solution for your problem. The company's new NetPen will let a customer scan a URL in a magazine, for example. The pen will store that URL. Once back in the office, the user places the pen in a "digital inkwell," which is a PC serial port. The stored URL is transferred, without having to type into the PC's browser. The pen interacts with NeoMedia Technologies' PaperClick.com service, which lets publishers print these specially encoded URLs on just about any physical object. End users only need to download a special plug-in from the PaperClick site to make the NetPen compatible with their computers. The NetPen will be available in two weeks and cost $115.

Hangin' 10 with the 10-Gigabit Ethernet Alliance

With momentum building around high-speed Ethernet, a group of vendors last week established the 10-Gigabit Ethernet Alliance to propagate the technology. The group mirrors the Gigabit Ethernet Alliance, formed four years ago to publicize work on Gigabit Ethernet and foster interoperability among LAN equipment vendors. The group hopes for similar success in these areas with 10-Gigabit Ethernet. There are seven founding members, including 3Com and Cisco. The group hopes to recruit charter members within the next month. The alliance's formation comes just after the IEEE decided to promote the study group looking at 10-Gigabit to a task force, giving it the designation 802.3ae. The task force hopes to reach a standard by March 2002.

10-Gigabit Ethernet Alliance

Founding members:

- 3Com
- Cisco
- Extreme Networks
- Intel
- Nortel Networks
- Sun Microsystems
- World Wide Packets

UPS delivers venture capital firm

United Parcel Service last week said it would form a research, development and incubation venture group called UPS e-Ventures. The subsidiary is designed to identify and develop new businesses related to supply chain management and e-commerce. The first company being developed by UPS e-Ventures is UPS e-Logistics, which plans to provide end-to-end business products to help e-commerce start-ups get up and running.

Growing, growing, grown

The number of Internet hosts worldwide rose 67% in 1999 from the previous year to surpass 72.4 million hosts, says the Internet Software Consortium. In 1998, there were 43.2 million 'Net hosts registered in the Domain Name System. The largest top-level domains are .com, with 24.8 million hosts, .net with 16.8 million and .edu with 6.1 million.

Novell reveals Web hosting plan

Company to partner with ASPs and ISPs.

BY DENI CONNOR

SAN JOSE — Novell last week aired a grand vision for helping companies build powerful e-commerce systems.

As expected, the company introduced its iChain business-to-business software, ZENworks for Servers and ZENworks for Networks management software, and personal Internet white pages called eGuide (*NW*, Feb. 7, page 1). Then, in perhaps the most unexpected break from tradition, the company best known for its network operating system, hinted it would host network services in a plan Novell CEO Eric Schmidt dubbed ePro.

With ePro, Novell will partner with ISPs and application service providers (ASP) to offer customers services based on the company's Novell Directory Services (NDS) eDirectory, management and security products. While details are fuzzy, ePro calls for Novell to set up ISPs that specialize in Novell services, such as storage, mail, net publishing or security. Novell did not rule out becoming a service provider of its own software.

"The outsourced IT model is critical to our success. By 2002, the mix of our business will be evenly split between core product sales and transactional-usage, subscription-like fees," says Dave Shirk, senior vice president of product marketing and management at Novell in Provo, Utah. The company's recent acquisitions of firms such as JustOn, a provider of online disk space for users, pave the way for these types of services, Shirk says.

In fact, Novell as a "proof of concept" has dabbled in the ISP market for two years. For example, the company owns an ISP called Neticus (www.neticus.com), which provides Internet access, e-mail, Web pages and newsgroups to Novell employees. Neticus uses Novell's NetWare 5, BorderManager, the NetScape Enterprise Server

See **Novell**, page 93

The iChain connection

Novell's new iChain e-commerce products and services can be implemented through:

- A do-it-yourself plan where the customer chooses and installs all the software.
- Novell's Consulting Services, resellers or other company partners.
- A host-based service where Novell supplies everything.

Novell's Schmidt discusses his company's new e-comm[illegible]erings last week.

Be a

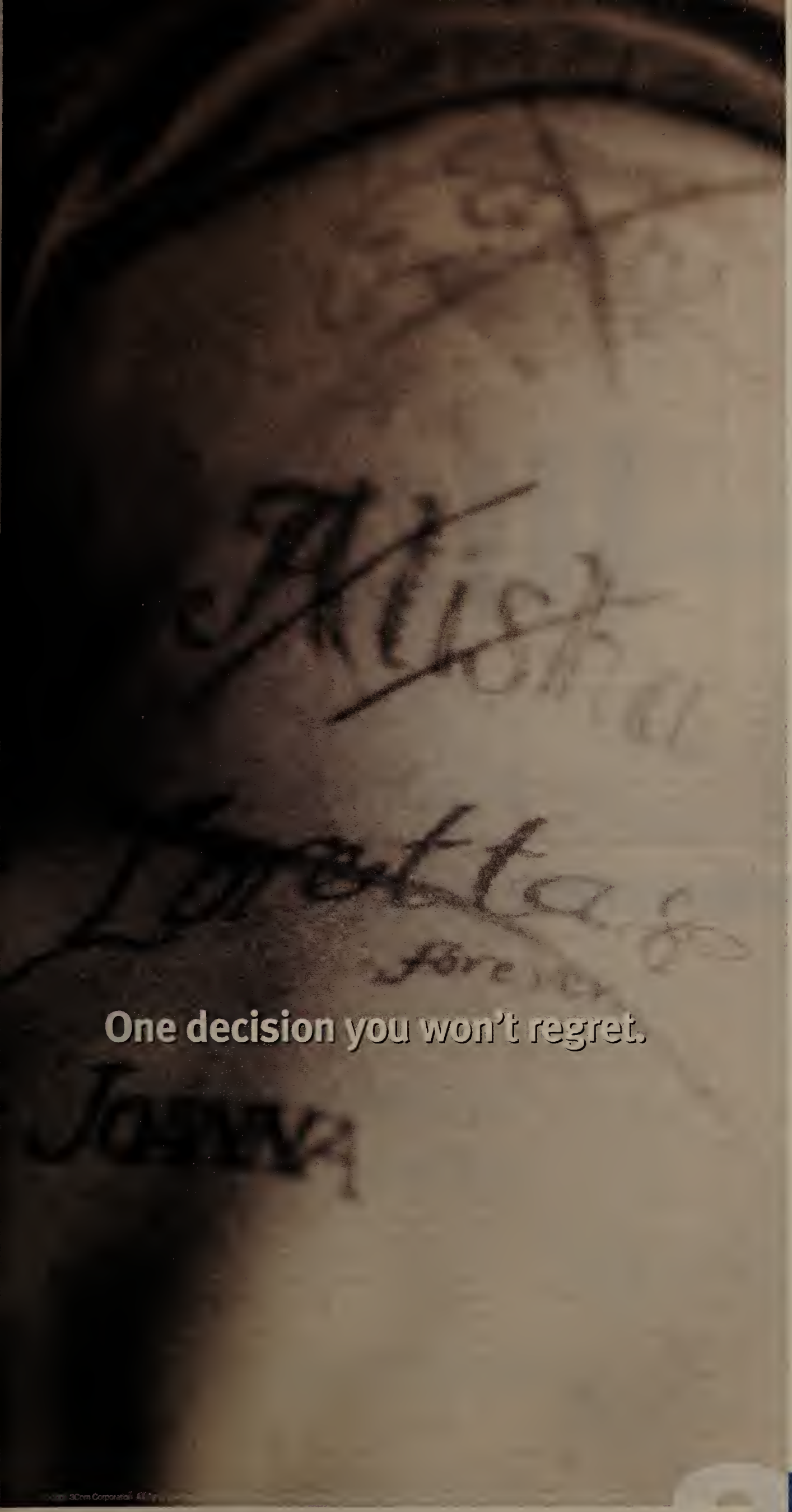
Net Know-It-All

For the answer to this week's question and more net trivia, **visit Network World Fusion** and enter **2349** in the DocFinder box.

This week's question:

What company's online business is called BlueLight.com?

www.nwfusion.com



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Vendors addressing IP Multicast's shortcomings

BY JASON MESERVE

SAN FRANCISCO — Vendors at last week's MCast 2000 Summit demonstrated a slew of products that may allay network professionals' fears about introducing IP Multicast into their operations.

IP Multicast, a technology that can transmit multimedia content over enterprise IP nets or the Internet, has been dogged by security concerns, a lack of management tools and router performance issues. Irdeto Access, NDS, Nortel Networks and Sun showed products aimed at answering these concerns.

In a nutshell, multicast technology allows information, be it streaming media or data files, to be simultaneously distributed across a network in a broadcast fashion. A single signal is propagated through the network and clients "tune in" to a specific Class D IP address to receive the broadcast. Many vendors, such as Cisco and Nortel, have implemented IP Multicast, and ISPs such as UUNET offer multicast services, but the technology has not caught on as proponents thought it would.

One reason has been a lack of security. At the moment, companies that want to transfer sensitive information such as financial data or employee briefings using multicast technology have no way of encrypting data as it is sent across the wire, making it vulnerable to interception. Irdeto Access of The Netherlands and NDS of Israel demonstrated technology that uses server-based encryption and client-side smart cards to protect information from source to target.

Irdeto Access' CypherCast package uses a standard PC that can encrypt data at nearly 35M bit/sec and prepersonalized smart cards that customers can distribute to individual users so they may gain access to the broadcasts. CypherCast comes with management software that runs on any Windows platform. Network managers can adjust user access via the multicast broadcast or across the Internet. Encryption can take place at the point of origin or at the uplink center if used with satellite technology.

NDS' CastGear works in a similar manner. The software mimics middleware and can work with various types of encryption methodologies, including public-key infrastructure products from Baltimore and Entrust. Encryption can take place on the same box as the broadcasting server, though NDS suggests using a separate machine. Both technologies will work with any content and will ship in the second quarter.

On the management front, Nortel demonstrated its Java-based IP Multicast Monitoring and Debugging tools for enterprise and carrier networks. While the enterprise version has been around for a while, Nortel recently upgraded its features to include triggered alerts if traffic is lost on a particular network segment.

According to Jyothi Hayes, a Nortel product manager, the firm plans to integrate the enterprise tool into its Optivity management suite at a later date. For now, the tool is available as stand-alone software. The carrier product is in beta testing.

In the quest to develop scalable, reliable and better-performing forms of IP Multicast, Sun detailed the Java Reliable Multicast (JRM) protocol, which will initially be available with the Solaris platform.

JRM will come as a standard Java library with multiple modules, including transport and programming interfaces, and channel management facilities. "There will be an open socket just like with TCP/IP to talk to the network," Sun Software Developer Dah Ming Chiu says.

When adding reliability to a multicast environment, customers lose scalability and performance as the number of receivers increases because each receiver is using a back-channel connection to relay performance information.

JRM promises to resolve these problems by letting customers set minimum and maximum flow rates so clients below the minimum rate can be "pruned" from the multicast environment and not degrade overall network performance.

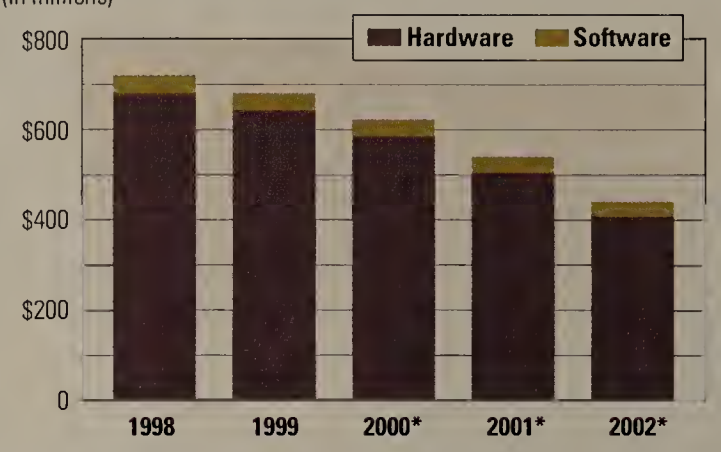
The project is currently in pilot mode in Sun's labs. ◪

More stories on IP Multicast: Page 18.

Multimedia over IP: A shrinking market

Despite some enthusiasm for IP Multicast technology, analysts predict that some markets in which the technology is used most (such as videoconferencing) will shrink over the next few years.

Worldwide revenue for videoconferencing hardware and software
(in millions)



*Projections based on past market data and end-user research.

SOURCE: DATAQUEST, SAN JOSE

Fiber net start-up boasts big bandwidth, low prices

BY TIM GREENE

SAN FRANCISCO — The slogan for start-up Yipes Communications is "Yipes, that's fast!" Another choice might be: "Yipes, that's cheap!"

The service provider says it will connect two customer sites on its local fiber networks at 3M bit/sec for just $900 per month. That's twice the bandwidth for less than the typical price of connecting two sites using a T-1 connection.

The decision to go with IP network gear rather than SONET or ATM equipment gives Yipes a competitive edge, says CEO Jerry Parrick, who previously ran US West's Interprise group and spearheaded its launch of digital subscriber line services.

"I've been looking for someone to take advantage of this optical technology, and Yipes is the first," says Andrew Cray, an analyst with Aberdeen Group in Boston.

Calling its network architecture "IP over glass," Yipes runs Gigabit Ethernet on optical fiber from its points of presence (POP) to customer sites. Customers plug their Ethernet LANs directly into Ethernet ports on Extreme Networks routers owned by Yipes but located at customer sites. The company has networks running in Palo Alto and Riverside, Calif., and in Fort Collins, Colo. Yipes says it will expand services to 18 cities by year-end.

The network design lets Yipes serve customers within 43 miles of a Yipes POP, a distance well-suited to the company's plan to serve dense metropolitan areas, Parrick says.

Yipes is capitalizing on the plummeting prices of IP network gear, he adds.

The cost of SONET optical equipment and ATM switches typically used in fiber metropolitan networks has also dropped in recent years. But this cost reduction pales in comparison to that of IP gear, says Mike Speyer, an analyst with The Yankee Group in Boston.

Because the company uses Gigabit Ethernet to feed customer sites on fiber, it can sell services in 1M bit/sec increments without having to install new wires, Parrick says. Yipes just turns up more bandwidth over the same strand of fiber. Bandwidth can be boosted within minutes of a customer's request, he says.

Today the alternative is buying extra T-1 lines in increments of 1.5M bit/sec and waiting weeks to get them installed. Plus, once customers buy five or six T-1s, it makes sense for them to switch to a 45M bit/sec T-3, which may be more than they need. And the wait for a T-3 could go on for months. ◪

PROFILE: YIPES COMMUNICATIONS

Headquarters:	San Francisco
Founded:	1999, formerly NanoSpace
Products:	High-speed Internet access, transparent LAN services based on IP-over-fiber local networks.
Employees:	100+
Funding:	$13.2 million from Norwest Venture Partners
Competitors:	Regional Bell operating companies, data CLECs.
Fun fact:	The company name was chosen because its offering has IP at the core and fits into the company slogan, "Yipes, that's fast!"

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1. What is the principal business activity at your location? (check ONE only)

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03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities/Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
10. ☐ Education
11. ☐ Government
12. ☐ Military
13. ☐ Aerospace
14. ☐ Consulting (Independent) *
15. ☐ Carriers/Service Providers
16. ☐ Internet Service Provider (ISP)
17. ☐ Manufacturing (Computer/Communications/OEM)
18. ☐ Resellers of Computer/Network Products (VARs,VADs) *
19. ☐ Systems/Network Integrators*
20. ☐ Distributors (Computer/Communications)*
21. ☐ Other (please specify) _____

*Attn Consultants, Integrators, Distributors, Resellers: Please complete entire form based on ALL clients and your own business needs

2. P: What is your primary job function? (check ONE only) S: What is your secondary job function? (check ALL that apply)

P	S		P	S		P	S	
☐	☐	1. Network Management	☐	☐	5. Internet/Intranet/E-Commerce Mgmt, Webmaster	☐	☐	7. Corporate Management (CEO, COO, CFO, Pres., VP, Dir., Mgr.)
☐	☐	2. LAN Management	☐	☐	6. Engineering Management	☐	☐	8. Consultant (Independent)
☐	☐	3. Datacom/Telecom Management				☐	☐	9. Other (please specify) _____
☐	☐	4. IS/IT/MIS/CIO/CTO/Systems Management						

3. What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of? (Please print the appropriate number code on the line next to each product category. Please complete ALL categories A–N.)

1. $100 Million or more
2. $50 Million to $99.9 Million
3. $25 Million to $49.9 Million
4. $10 Million to $24.9 Million
5. $1 Million to $9.9 Million
6. $100,000 to $999,999
7. $50,000 to $99,999
8. Under $50,000
9. None of the above

A ____ Large Systems *(Mainframes/Minis)*
B ____ Desktops *(Micros/Laptops/Workstations/PDAs)*
C ____ Servers
D ____ LANs
E ____ WAN Equipment
F ____ Carrier Services
G ____ Internetworking
H ____ Internet
I ____ Intranet
J ____ Extranet/E-Commerce
K ____ Remote Access
L ____ Peripherals *(including storage)*
M ____ Software
N ____ Service/Support

4. What is the total number of sites for which you have purchase influence? (check ONE only)

1. ☐ 100+ 2. ☐ 50 – 99 3. ☐ 20 – 49 4. ☐ 10 – 19 5. ☐ 2 – 9 6. ☐ 1 7. ☐ None

5. What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization? (check ONE box in each column)

	SERVERS		CLIENTS		LANS	
	At Location (A)	Entire Org. (B)	At Location (C)	Entire Org. (D)	At Location (E)	Entire Org. (F)
1.	50,000+		50,000+		50,000+	
2.	10,000 to 49,999		10,000 to 49,999		10,000 to 49,999	
3.	1,000 to 9,999		1,000 to 9,999		1,000 to 9,999	
4.	100 to 999		100 to 999		100 to 999	
5.	50 to 99		50 to 99		50 to 99	
6.	10 to 49		10 to 49		10 to 49	
7.	1 to 9		1 to 9		1 to 9	
8.	none		none		none	

6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check ONE only)

CDRPORATE:
1. ☐ Entire Enterprise/Multiple Enterprises
2. ☐ Division/Multiple Divisions
3. ☐ Department
4. ☐ None

B. Involvement (check ALL that apply)

1. ☐ Create Network/IT Strategy
2. ☐ Recommend/Specify Brand
3. ☐ Approve Purchase
4. ☐ Evaluate Products/Services
5. ☐ Determine the Need
6. ☐ None

7. What is the estimated number of employees at your location/in entire organization? (check ONE in each section)

A. At your location:

1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 250 – 499
8. ☐ 100 – 249
9. ☐ 99 or less

B. Entire organization:

1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 499 or less

8. Please indicate the Internet/Intranet/LAN/WAN products/services that you are currently involved in purchasing or plan to purchase (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

INTERNET/INTRANET

A	B		A	B		A	B	
☐	☐	01. VPN Equipment	☐	☐	07. Voice/Video Over IP (IP Multicast Routing)	☐	☐	12. Management/Monitoring Software
☐	☐	02. VPN Services				☐	☐	13. Web Based Management Tools
☐	☐	03. Firewalls/Security/Encryption	☐	☐	08. Internet Services	☐	☐	14. Web Based Collaboration/Groupware
☐	☐	04. Electronic Commerce	☐	☐	09. Web Hosting			
☐	☐	05. Web Servers/Software	☐	☐	10. Host Access	☐	☐	15. Caching/Load Balancing Products
☐	☐	06. Web Enabled Call Center Tools	☐	☐	11. Web Development Tools	☐	☐	16. Other Internet/Intranet

LOCAL-AREA NETWORKS/INTERNETWORKING

A	B		A	B		A	B	
☐	☐	17. Local-Area Networks	☐	☐	25. Layer 2 Switches	☐	☐	33. UPS
☐	☐	18. Network Operating System Software (NOS)	☐	☐	26. Layer 3 Switches	☐	☐	34. Network Interface Cards (NICs, PCMCIA)
			☐	☐	27. Layer 4 Switches			
☐	☐	19. Intel Based Servers	☐	☐	28. ATM Switches	☐	☐	35. Hubs/Intelligent Hubs/Stackable Hubs
☐	☐	20. Intel Based Multiprocessor Servers	☐	☐	29. Token-Ring Switches			
☐	☐	21. RISC Based Servers	☐	☐	30. Network Storage (NAS, SANs)	☐	☐	36. Cables,Connectors, Baluns
☐	☐	22. Clustered Servers	☐	☐	31. Storage/Backup (Optical, Disk, Tape, RAID)	☐	☐	37. SNMP Platform
☐	☐	23. Print Servers				☐	☐	38. Management Frameworks
☐	☐	24. Routers	☐	☐	32. Network Test/Diagnostic Tools	☐	☐	39. Other LAN/Internetworking

WAN EQUIPMENT & SERVICES

A	B		A	B		A	B	
☐	☐	40. Modems	☐	☐	46. Remote Access Services	☐	☐	53. PBXs
☐	☐	41. Cable Modems	☐	☐	47. Wireless Data Equipment/Services	☐	☐	54. Videoconferencing
☐	☐	42. Asynchronous Transfer Mode (ATM)	☐	☐	48. ISDN Equipment/Services	☐	☐	55. Managed LAN/Router Services
☐	☐	43. Frame Relay Equipment Including FRADS	☐	☐	49. FT-1/T-1/T-3 Services	☐	☐	56. Fax Servers/Services
			☐	☐	50. xDSL Services/Products	☐	☐	57. Other WAN Equipment/Services
☐	☐	44. Frame Relay Services	☐	☐	51. Diagnostic/Test Equipment			
☐	☐	45. Remote Access Products	☐	☐	52. DSU/CSU			None of the above (1 – 57) ☐ ☐ 58.

9. Please indicate the Network hardware/software/services that you are currently involved in purchasing or plan to purchase: (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

COMPUTERS/PERIPHERALS

A	B		A	B		A	B	
☐	☐	01. Laptops/Notebooks/PDAs	☐	☐	05. Storage/Backup (Optical,Disk,Tape,RAID)	☐	☐	08. Minis
☐	☐	02. PCs				☐	☐	09. Mainframes
☐	☐	03. Windows Terminals/Thin Clients	☐	☐	06. Printers	☐	☐	10. Fax/Modem Boards
☐	☐	04. Workstations	☐	☐	07. Printer/Fax/Copier Hybrids (Multifunction Printers)	☐	☐	11. Memory/Chips/Boards/Cards
						☐	☐	12. Other Computers/Peripherals

SOFTWARE/APPLICATIONS

A	B		A	B		A	B	
☐	☐	13. Network Management	☐	☐	21. E-Mail	☐	☐	28. Site Metering Tools
☐	☐	14. Systems Management	☐	☐	22. Enterprise Resource Planning (ERP)	☐	☐	29. Data Warehousing
☐	☐	15. Security				☐	☐	30. Anti Virus Software
☐	☐	16. Directory Services	☐	☐	23. EDI	☐	☐	31. Multimedia
☐	☐	17. Operating Systems	☐	☐	24. Desktop Videoconferencing	☐	☐	32. Y2K Conversion Software
☐	☐	18. Applications Development Tools	☐	☐	25. Imaging	☐	☐	33. Helpdesk
☐	☐	19. Database Management/RDBMS	☐	☐	26. Middleware/Serverware	☐	☐	34. Other Software/Applications
☐	☐	20. Groupware	☐	☐	27. Document Management			

SERVICES

A	B		A	B		A	B	
☐	☐	35. BPO (Business Process Outsourcing incl. Financial Services, HR, Logistics, etc.)	☐	☐	36. Applications Outsourcing	☐	☐	39. Education/Training Services
			☐	☐	37. Call Center Outsourcing	☐	☐	40. Other Services
			☐	☐	38. Systems Integration/Consulting			None of the above (1 – 40) ☐ ☐ 41.

10. Please indicate the platforms that are currently installed/planned: (check ALL that apply)

A. Currently installed B. Planned for purchase

NETWORK PROTOCOLS

A	B		A	B		A	B	
☐	☐	01. TCP/IP	☐	☐	04. Novell IPX/SPX	☐	☐	07. NFS
☐	☐	02. IPv6	☐	☐	05. APPC/APPN/LU 6.2	☐	☐	08. SNMP
☐	☐	03. SNA	☐	☐	06. NETBIOS/NETBUEI	☐	☐	09. Other Network Protocols

LAN/WAN ENVIRONMENT

A	B		A	B		A	B	
☐	☐	10. Gigabit Ethernet	☐	☐	16. IP Switching	☐	☐	22. Wireless
☐	☐	11. Switched Ethernet	☐	☐	17. Layer 3,4 Switching	☐	☐	23. DSL
☐	☐	12. Fast Ethernet	☐	☐	18. FDDI	☐	☐	24. ISDN
☐	☐	13. Ethernet	☐	☐	19. 100Base-T	☐	☐	25. Frame Relay
☐	☐	14. ATM	☐	☐	20. 10Base-T	☐	☐	26. Private Line T1, T3, FT-1, SDNET
☐	☐	15. Token Ring/Token Ring Switching	☐	☐	21. Fibre Channel	☐	☐	27. Other LAN/WAN Environment

NETWORK OPERATING SYSTEM

A	B		A	B		A	B	
☐	☐	28. Windows NT/Windows 2000	☐	☐	32. LINUX	☐	☐	35. IBM (LAN Server)
☐	☐	29. Novell (NetWare 5.X)	☐	☐	33. Microsoft (LAN Manager)	☐	☐	36. Other Network Dperating System
☐	☐	30. Novell (NetWare 4.X)	☐	☐	34. Banyan (Vines)			
☐	☐	31. Novell (NetWare 2.X,3.X)						

COMPUTER OPERATING SYSTEM

A	B		A	B		A	B	
☐	☐	37. NT Workstation	☐	☐	42. LINUX	☐	☐	47. Digital VMS
☐	☐	38. Windows 2000	☐	☐	43. DOS	☐	☐	48. Macintosh
☐	☐	39. Windows 98/95/3.1	☐	☐	44. DS/2,OS/2 WARP	☐	☐	49. Other Computer Operating System
☐	☐	40. Intel based UNIX	☐	☐	45. OS/400			
☐	☐	41. RISC based UNIX (incl. SOLARIS)	☐	☐	46. IBM MVS/VM/VSE/ESA			None of the above (1 – 49) ☐ ☐ 50.

11. Which of the following hardware platforms are installed/planned in your company? (check ALL that apply)

A - Mainframes (Large Scale)
1. ☐ IBM
2. ☐ Other

B - Minis (Midrange)
1. ☐ IBM RS/6000
2. ☐ IBM AS/400
3. ☐ Digital/Tandem/Compaq
4. ☐ Unisys
5. ☐ H-P
6. ☐ Other

C - Workstations
1. ☐ Sun Microsystems
2. ☐ H-P
3. ☐ Digital/Compaq
4. ☐ IBM
5. ☐ Silicon Graphics
6. ☐ Other

12. What is the estimated gross revenue of your entire company/institution? (check ONE only)

1. ☐ $20 Billion or More
2. ☐ $10 Billion to $19.9 Billion
3. ☐ $1 Billion to $9.9 Billion
4. ☐ $500 Million to $999.9 Million
5. ☐ $100 Million to $499.9 Million
6. ☐ $50 Million to $99.9 Million
7. ☐ $10 Million to $49.9 Million
8. ☐ $5 Million to $9.9 Million
9. ☐ $4.9 Million or less
10. ☐ None of the above

13. For which areas outside of the US do you have purchase influence? (check ALL that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ Africa
7. ☐ Canada
8. ☐ None

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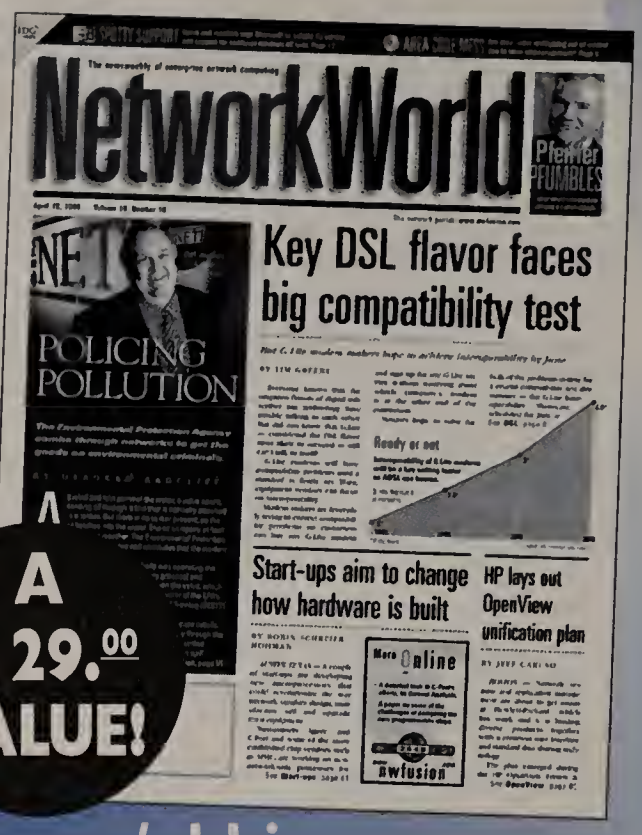

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Network vendors gobble each other up

BY TIM GREENE

More than $12 billion worth of acquisitions were announced last week by a slew of network companies, continuing a trend that shows no sign of stopping soon.

Interestingly, the companies doing the buying were a mix of large and small firms. These included Lucent and Nortel (see story, page 18), as well as Akamai (see story, page 29) and Kana Communications, which have huge market capitalizations thanks to Wall Street's current infatuation with Internet stocks.

In fact, the biggest dollar deal was made by Kana Communications, which sells software that helps companies better manage e-mail. Kana set down $4.2 billion in stock to buy Silknet Software, which writes applications that let e-business customers check on orders.

That's a big bite for Kana, a company that ended 1999 with a net loss of about $119 million, but boasts a market capitalization of about $6.5 billion. It also seems a pretty penny to pay for a company that pulled in just under $8 million in revenue and lost nearly $4 million in the last quarter.

Financial experts, many of whom benefit from such transactions, claim that deals like the ones made last week can benefit customers. "It should translate into newer capabilities and more capabilities faster, and these capabilities should be better-integrated," says George VonGehr, managing partner of Alliant Partners, a Palo Alto firm that specializes in mergers and acquisitions.

For example, when a major vendor like Cisco buys two VPN vendors, customers should expect the acquired devices to be well-integrated with Cisco's management platform. They can also expect them to work with Cisco gear, VonGehr says.

The acquisition trend will continue as long as large vendors need to fill gaps in their product lines and as long as it is faster to buy than to build the missing gear, says Christopher Nicoll, an analyst with Current Analysis in Sterling, Va.

In addition, start-ups with enormous market capitalizations will continue to buy to justify the value Wall Street places on them, says Anthony Abate, a principal with Battery Ventures in Boston. These newcomers have easy access to funds that they use to buy other companies.

Those purchases should be designed to broaden the buyer's product line and bring in a new stream of revenue, Abate says. As long as they show the potential to do these two things, deals can be justified, he says. "It's a land grab. You grab first and worry about profitability later," Abate says.

Snapping up other companies also keeps them away from the competition, VonGehr says. "If you buy it, that means somebody else didn't," he says.

Larger companies, such as Cisco, Nortel and Lucent, buy for other reasons, such as filling specific gaps in their product lines, Nicoll says. As the vendors grow, some customers expect them to meet all their network needs, VonGehr says. Sometimes the best way to do that is buying another company, he adds.

Large companies also buy smaller ones that have new technology. Nortel plunked down $3.25 billion last year for Qtera to get its hands on the start-up's patented long-haul optical technology. "Sometimes bigger companies need the innovation of smaller companies," VonGehr says.

The merger-acquisition trend is becoming a cycle that feeds itself, Nicoll says. As start-ups get absorbed, their top executives get restless and move on to form more start-ups, which also get bought.

For example, former Cascade executives are responsible for at least four start-ups, including the highly valued Sycamore Networks. ◪

Millions and billions for buyouts

Here is a sampling of the acquisitions that went down just last week.

Buying company (specialty)	Bought company (specialty)	Value of deal
Akamai (fast Web content delivery)	Intervu (Web video delivery)	$2.8 billion
Corel (Linux PC operating system and WordPerfect)	Inprise (application development tools)	$2.44 billion
Kana (e mail management)	Silknet (online sales and service technology)	$4.2 billion
Lucent (network gear)	Ortel (optical parts for cable networks)	$2.95 billion
Nortel Networks (network gear)	Dimension Enterprises (engineering and business consultants)	$64 million
Visual Networks (monitoring and management equipment)	Avesta (application performance management)	$40 million
Peregrine (management for data gear)	Telco Systems (management for voice gear)	$111million
Sun (computer hardware and software)	Trustbase (security technology)	undisclosed

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Cabletron,

continued from page 1

Company CEO Piyush Patel says this course of action will give Cabletron the "focus and agility" to seize opportunities in the markets targeted by the new companies, and to better serve customers. He also says the move will increase shareholder value, something Cabletron has been striving to do since late 1998 when it surprised Wall Street with a money losing quarter.

Since then, Cabletron has sold off its xDSL business, outsourced its manufacturing and realigned itself to focus on the four key market segments its operating companies will target.

The turning point, though, was when Benson resigned in June after more than 15 years at the company he co-founded in a New England garage. He was succeeded by Patel, who joined Cabletron with the company's acquisition of start-up Yago Systems two years ago.

"We have accomplished much over the last year," Patel says. "We are now at the point where we believe that the business is capable of accelerating its growth. . . . It has become clear to us that to take advantage of the growth opportunities, we must separate into more targeted businesses with a start-up company drive and culture."

Cabletron customers were not blindsided by the move. Indeed, they took it in stride.

"I sort of had inklings this was coming; they already did the Aprisma thing," says James Wiedel, director of networking at the University of Southern California in Los Angeles. "It's not really too surprising."

Wiedel expects his dealings with the Cabletron companies to be "business as usual," but in the future things could get "interesting," he says.

"We'll see if some of them jump ahead of the competition or whether they become objects to be eaten by other companies," Wiedel says. "This may be a setup for buyouts for the various parts. I think we have to wait and see."

Patel, who will be chairman of the holding company, says the breakup will enable each company to compete effectively in its target market to the point of attaining the No. 1 or No. 2 market share position.

Riverstone will be led by Romulus Pereira, who had been Cabletron's chief operating officer. Riverstone will focus on Web hosters, application service providers, competitive local exchange carriers, ISPs and alternate carriers.

Enterasys will be led by Henry Fiallo, who had been Cabletron's chief information officer. Enterasys will focus on large enterprise network customers.

GNTS will be led by Earle Humphreys, who was Cabletron's executive vice president of global services and support. GNTS will provide professional services, including the design, performance, management and security of networks for large enterprise and service provider customers.

Aprisma Management Technologies will continue to be led by President Michael Skubisz. Aprisma, formed last June, develops infrastructure management software for the service provider and enterprise network markets.

Cabletron's SmartSwitch and SmartSwitch Router products and technology will be shared among the companies under reseller, OEM, joint intellectual property ownership and other business arrangements, Pereira says. Initially, Cabletron's products will maintain their current price, form factor and functionality, but will diverge over time to best suit the needs of each company, he says.

The Cabletron brand, meanwhile, will remain with the holding company, and company officials say they intend to leverage it going forward. But at some point they may elect to retire it, they say. ◪

The baby Cabletrons

Cabletron has decided to split into four separate companies, each with its own focus:

- **Riverstone** will concentrate on the service provider market, including content hosting, ASPs, CLECs, ISPs and alternate carriers.
- **Enterasys** will target large Global 2000 enterprise network customers.
- **Global Network Technology Services** will deliver professional services, including the design and management of enterprise and service provider networks.
- **Aprisma Management Technologies** will offer infrastructure management software for service provider and enterprise network markets.

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IBM makes NUMA-Q line Shark-ready

BY MARC SONGINI

SAN ANTONIO, TEXAS — IBM is starting to break the silence about some of the specific plans it has for its NUMA-Q line of Unix-based Intel servers.

This week at Sequent's Enterprise Solutions Summit user conference, IBM is expected to announce an upgrade to the operating system of its NUMA-Q line, DYNIX/ptx, to handle Fibre Channel communications with IBM's Enterprise Storage Server, called "Shark." With this move, IBM hopes to lure customers away from EMC, whose Symmetrix boxes are the storage platform of choice for NUMA-Q users. IBM also wants to prove that NUMA-Q boxes will be tightly integrated into its product lineup.

IBM last summer bought the NUMA-Q unit, formerly Sequent Computer Systems, for $810 million. At the time, observers criticized IBM for adding another Unix flavor to its lineup, which already features AIX. Since the buyout, IBM has said little about its plans for NUMA-Q, except that the company expects to integrate Sequent's nonuniform memory access (NUMA) architecture into other IBM servers.

Will NUMA-Q's ability to work with IBM's storage Shark help boost server sales?

IBM claims it has tweaked the NUMA-Q Fibre Channel drivers to handle communications with Shark boxes at speeds up to 95M byte/sec per channel. This is just shy of the 100M byte/sec capacity of Fibre Channel protocol. Shark handles up to 11.2 terabytes of data.

IBM hopes coupling Shark with NUMA-Q will be attractive to users running business intelligence, data mining, enterprise resource planning and other applications.

However, selling NUMA-Q to users who need more than data warehousing may be an uphill battle — with or without Shark support, says one vice president of operations who spoke on condition of anonymity. His network has four NUMA-Q boxes running financial applications, and his company plans to phase them out in favor of Hewlett-Packard servers running HP-UX. He says HP is an easier platform to manage because there are more applications and trained IS staff available to work with HP servers.

On the other hand, some hard-core NUMA-Q users are excited by the chance to make their networks as Blue as possible. "Shark would certainly be a key candidate for where we might take our disk subsystems," says Michael Prince, chief information officer at Burlington Coat Factory Warehouse in Burlington, N.J.

The Shark storage server will work with all NUMA-Q servers running DYNIX/ptx 4.4.7. Upgrades for current users are free. An average new NUMA-Q box, including the operating system costs $237,625.

Shark storage server costs from $250,000 to $2 million.

IBM: www.ibm.com or www.sequent.com

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IBM labs make atomic data transfer possible

If you thought a Palm was small, wait until you hear what IBM is cooking up in the labs. IBM researchers are playing around with a system that can process data — on an atomic level. That's right, atoms can now pass information amongst themselves, leading to the possibility of supertiny, supersmart devices. **DocFinder: 6843**

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CIOs scoff at early report of IT's demise

Maybe Forrester Research is trying to get attention. Or maybe, just maybe, it believes this hooey that in-house IT departments will be decimated over the next few years.

Here's the theory: E-commerce is taking over and is the new cornerstone of a company's IT operations. Because of the 'commerce' in 'e-commerce', business people will own this critical function. **DocFinder: 6844**

Online bank: Lax security opened door for thieves

Getting back to hackers, an Internet bank has nest egg on its face after a bunch of hackers tricked the online institution into handing over funds that belonged to legitimate customers. A car rental agency, for instance, checked its balance, only to discover that $21,000 was missing. **DocFinder: 6845**

www.nwfusion.com

Attack,
continued from page 1

other sites used a new breed of network weapons called distributed denial-of-service attack tools. The tools can unite hundreds or even thousands of computers to flood the routers or servers of target Web sites with bogus requests, blocking legitimate users and shutting down e-businesses (see graphic, page 12).

Last week's targeted sites, working closely with their ISPs and Web-hosting providers, needed an average of three hours to get their Web sites up and running after being struck.

Equipment vendors and service providers were tripping over one another last week to claim tht their latest offerings could prevent or minimize damage from denial-of-service attacks. But security experts say companies are largely defenseless against attacks as powerful as the ones launched last week, though they say properly configuring certain switches and routers can help ease the pain.

"It's just not possible to shut down denial-of-service attacks today," says Roberto Medrano, general manager for Hewlett-Packard's security division. "But it is important how you react to them, by filtering out addresses and giving priority to the ones you want."

The FBI, which is working with the victims of last week's attacks to find the culprit or culprits, is encouraging companies to visit the National Infrastructure Protection Center (www.nipc.org) to download free software that can help determine whether their computers are being used as staging areas for denial-of-service attacks. Companies can also consult the new IETF draft RFC 2267 to find procedures, such as router rate-limit filtering, designed to thwart denial-of-service attacks.

UUNET's Mark Krause, senior manager of infrastructure security, says he'd like to see tools that let ISPs detect and track denial-of-service attacks in real time. Most of last week's victims are UUNET Internet access customers, he says.

Two security software vendors, CyberSafe and Internet Security Systems, are working separately on versions of their intrusion-detection products for ISPs. But this future vision was little help to the half-dozen sites temporarily forced out of business by a bombardment of unwanted IP packets.

Despite the FBI's involvement and strong words from U.S. Attorney General Janet Reno, observers don't expect a fast resolution. But they are hopeful that the investigation will be successful over time.

"It's hard, but we caught people at NASA just a few months ago," says Tom Talleur, a KPMG director who specialized in commercial crimes at NASA and U.S. intelligence agencies. "They took out our servers at NASA all the time."

Reports late last week said the FBI was zeroing in on undisclosed locations in California and Oregon as possible sources of the attacks.

See **Attack**, page 12

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Attack,
continued from page 10

Based on the information it collected last week, the FBI believes all the attacks involved the use of any of the four known distributed denial-of-service attack tools. Two of them, the Unix-based Trin00 and Tribal Flood Network (TFN), were discovered last November. Two more, Stachel-draht (German for "barbed wire") and TFN2K (a version of TFN ported to Windows NT that encrypts its IP packet bombardments to make them harder to detect) were found on the Web just last week.

The older denial-of-service attack tools, which have been around for years, are limited to one attacker firing bogus packets at a victim's server or router. But the newer distributed type operate on the idea that the attacker, with client software, can remotely control several servers to launch the attacks through a "master" server.

"To my knowledge, the attack came from all directions," says Monty Mullig, vice president of Internet technology at CNN, whose news site gets 2.5 million page views each day. CNN, which uses six ISPs, noticed problems with its routers at around 7 p.m. last Tuesday. "The attack was broadly distributed across all our providers," he says.

GTE Internetworking, an ISP for CNN.com and three other assault victims — E*Trade, Amazon.com and ZDNet — worked to set up filters at upstream routers away from the Web servers to block the IP-based attacks. Kelly Cooper, Internet security officer at GTE Internetworking, says the ZDNet news site was swamped by a massive attack of bogus requests called a "SYN Flood." Once ZDNet and GTE Internetworking realized the attack was on, at about 7 a.m. last Tuesday, they started looking for suspicious traffic patterns in the server logs and upstream routers.

After SYN flooding was determined to be the cause, GTE Internetworking began filtering out illegitimate traffic at the router. Cooper says it wasn't possible to determine the source of the attack because the IP addresses had apparently been spoofed. This type of traffic was using IP addresses set aside by the Internet Assigned Numbers Authority to be used only in private IP networks, Cooper says. The fact that the addresses looked out of place on the Internet helped identify them in order to filter them out.

An e-commerce site, Buy.com, was jammed from 11 a.m. to 2 p.m. Tuesday. During that time, Exodus Communications, the Buy.com Web-hosting service provider in Santa Clara, managed to analyze the offending traffic and filter it out.

Gary Grossman, director of security research and development at Exodus, declines to state the exact nature of the attack on Buy.com. But he urges organizations to ensure that distributed denial-of-service attack code has not been secretly installed on their servers.

Yahoo, the first known victim in last week's string of attacks, was lost in cyberspace for about three hours. Yahoo's Sunnyvale, Calif., Web hosting company, Global Center, worked closely with Yahoo once the Internet portal realized it was being hit.

"Both Yahoo and we noticed traffic changes simultaneously," says Laurie Priddy, an executive vice president at Global Center, which houses Yahoo's routers and server farm. The first sign of trouble, she says, came early last Monday when "the outbound traffic flow had dropped dramatically while inbound had increased."

Staff from Yahoo and Global Center spent half an hour diagnosing the routers and at first thought there were interoperability problems between the Yahoo and Global Center routers.

"Everything had been fine one moment, and the next — not!" Priddy says. "All the traffic had stopped, and packets were being dropped." Another network service provider also called to report problems.

After 30 minutes of equipment diagnosis, Yahoo and Global Center realized a denial-of-service attack was under way in which massive amounts of unwanted ICMP echo reply packets, or pings, were aimed at the Yahoo gear. Global Center managed to get the situation under control by implementing a rate-limit filter in the routers to stop the ICMP bombardment.

Some security experts believe the denial-of-service attacks are coming from the university community, in which students have large amounts of network bandwidth and budding curiosity. Universities acknowledge there's plenty of opportunity for it.

"The very idea of having an open, accessible network invites the type of attack that we're seeing," says John Fisher, director of network support services at Rensselaer Polytechnic Institute in Troy, N.Y. "This is the first time students get exposed to that much bandwidth. It's almost like electronic crack."

Fisher adds that denial-of-service attacks can be difficult to trace. "If the attackers are clever and are masquerading who they are, they're probably using other systems they've broken into, and it can be very difficult."

Senior Editor Carolyn Duffy Marsan also contributed to this report.

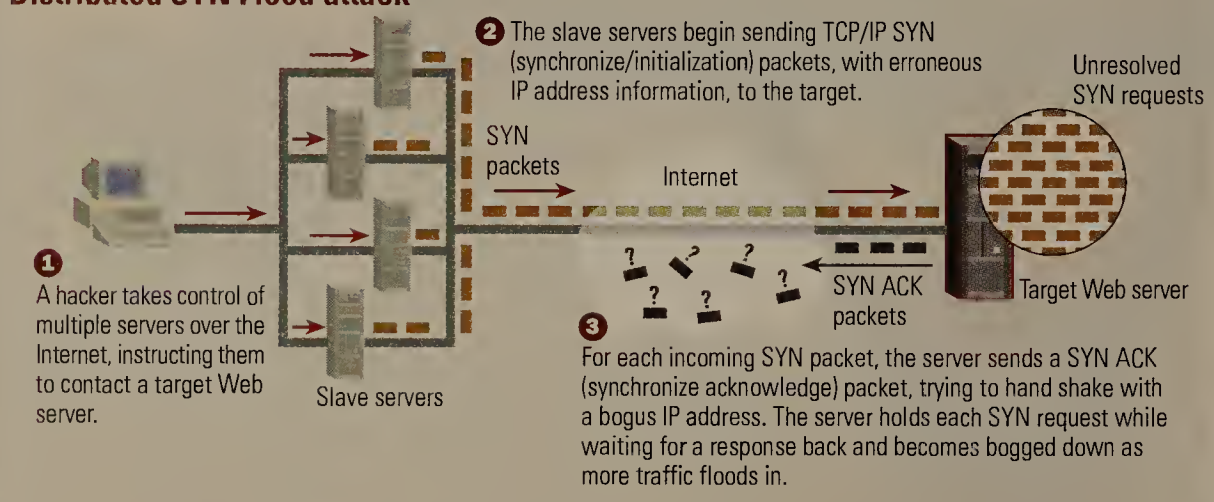
Distributed denial-of-service attacks

In a distributed denial-of-service attack, the attacker remotely takes control of a "master" server where the DoS code has been installed. The master server then controls the actions of "slave servers" on which the code has also been installed with or without the knowledge of the owner. When instructed, these slaves flood target nodes with traffic. By focusing the power of hundreds of attacks on a target node, the machine becomes overwhelmed. In addition, bandwidth may also become unavailable for legitimate use.

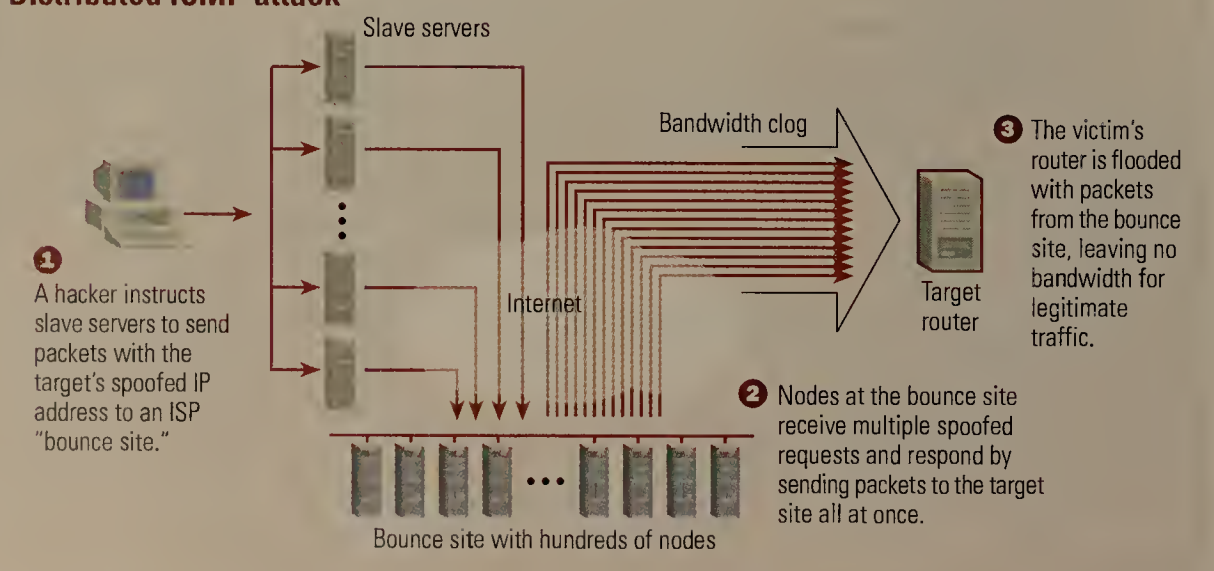
First identified in November, there are now four known distributed DoS attack programs available on the Web. The first two are the Unix-based Trin00 and Tribal Flood Network (TFN). The second pair, identified just last week, are Stacheldraht (German for "barbed wire") and TFN2K. Security experts say TFN2K differs from the original TFN in that it is available for Windows NT and Unix, and that the program uses encryption during network bombardments to hide more effectively.

Last week, distributed SYN Flood and ICMP (Ping) attacks were used to disrupt traffic at ZDNet.com and Yahoo.com, respectively. Here's an example of what may have happened in each attack:

Distributed SYN Flood attack



Distributed ICMP attack



www.nwfusion.com

WARDING OFF ATTACKS

We've gathered important resources to help you prevent and recover from a denial-of-service attack:

Cisco's security advisory page.

Index of distributed attack tools from Packet Storm.

Security warning on Trin00 and Tribe Flood Network from Lawrence Livermore National Labs.

Tools to test your network's vulnerabilities from Technotronic.

For more resources, ongoing coverage and to talk to other network managers in our forum, head online.

DocFinder 6836 find it online

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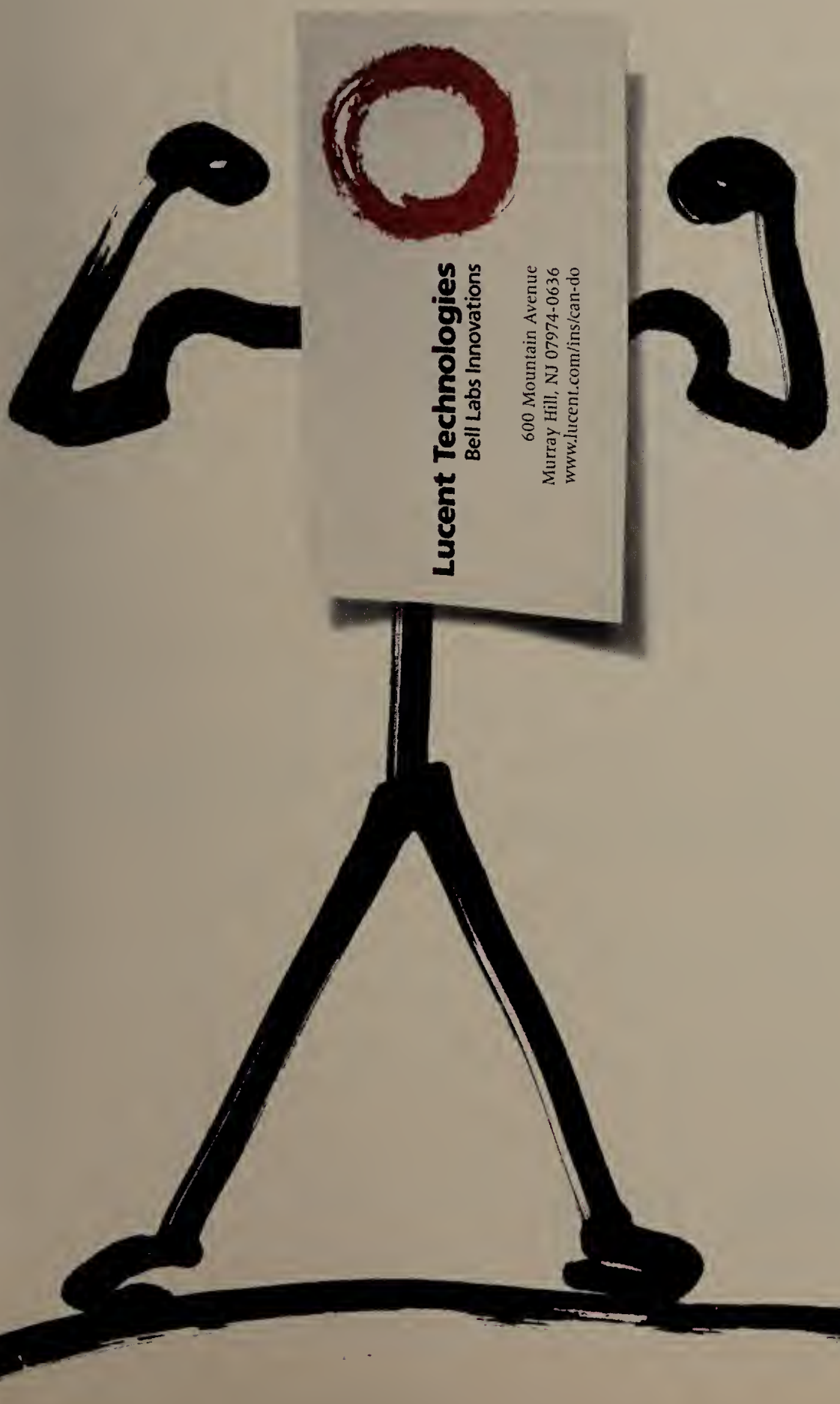

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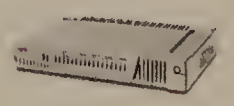

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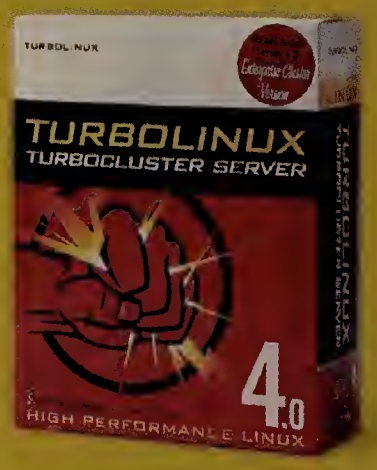

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Infrastructure

TCP/IP, LAN/WAN Switches, Routers, Hubs, Access Devices, Clients, Servers, Operating Systems, VPNs, Networked Storage

Briefs

IBM last week enhanced the processor and memory capacity for its 37XX front-end processor family. The company rolled out a 533-MHz Pentium III processor with 128M bytes of memory for the 3745 Models 17A, 21A, 31A, 41A, 61A, and 3746 Models 900 and 950.

The upgrade includes a control unit equipped with 13.5G bytes of hard disk capacity, a CD-ROM drive, a 15-inch monitor and an IBM modem for remote access at speeds up to 115.2 K bit/sec. The current 3745 processor is a 350-MHz or 450-MHz Pentium II with 96M bytes of memory and 3.2G bytes of hard disk capacity.

The 3746 Models 900 and 950 get a Pentium III 533-MHz processor and a memory boost to 256M bytes, including 128M bytes of base memory, and 13.5G bytes of hard disk capacity.

Currently, Models 900 and 950 run a Pentium II 350-MHz or 450-MHz processor, and have 128M bytes of base memory and 3.2G bytes of hard disk capacity. The upgrades are available.

IBM: www.ibm.com

Hewlett-Packard announced configurations and pricing for 13 HP desktop and notebook PC models that will ship preloaded with Windows 2000 Professional beginning Feb. 17.

HP's new OmniBook notebooks are priced starting at $2,199, Brio PCs at $799, Vectra PCs at $1,729 and Kayak workstations at $2,319. HP is also readying Win 2000-ready HP NetServer systems but has not yet announced pricing.

HP says its NetServer systems running Win 2000 Advanced Server will provide improved performance, scalability, reliability and uptime for Web, file and database servers.

Hewlett-Packard: www.hp.com

Sitara brings QoS to branch offices

BY JIM DUFFY

WALTHAM, MASS. — Sitara Networks believes it has the answer for ensuring quality of service (QoS) over low-speed lines.

The company last week announced a QoS appliance called QoSWorks. QoSWorks is designed for branch and remote office environments where WAN speeds top out at T-1/E-1.

In the LAN environment, where bandwidth is inexpensive, users administer QoS just by throwing more bandwidth at applications. But in the WAN, where bandwidth is at a premium — indeed, 88% of frame relay links are 128K bit/sec or slower, according to Sitara — QoS administration is a science.

QoSWorks is designed for companies looking to engage in e-business but wary of sharing bandwidth for business applications with e-mail, Web browsing and streaming media. To help reserve bandwidth for the applications that need it most, QoSWorks classifies traffic and allocated bandwidth based on priority policies established for specific traffic classes.

Bose: Europe calling

Audio equipment maker Bose in Framingham, Mass., is using QoSWorks initially to classify traffic on two 64K bit/sec WAN links — one to Europe and the other to the southwestern U.S. Applications running on the links include HTTP, Microsoft Exchange, TCP and UDP, and LAN bridge traffic.

"The first step of the game is to just characterize the traffic based on these protocols. Then the next step will be to actively manage it and set priorities so we can give performance to those things that are more critical," says Rob Ramrath, director of corporate information services at Bose.

It may be obvious that Exchange traffic would take precedence over HTTP data, but Ramrath says that may not be the case.

"When you hit a send button on your Microsoft Outlook menu, do you know or care that that message shows up in your receiver's inbox in three seconds, 10 seconds or four minutes?" he asks. "However, when you're browsing the intranet and you hit a link, you certainly care how fast that comes up. So until we really examine it, I wouldn't necessarily know which ones we're going to jump to and prioritize."

QoSWorks is a hardware device with two 10/100M bit/sec LAN ports. One connects the device to a LAN switch or hub, the other to a WAN router.

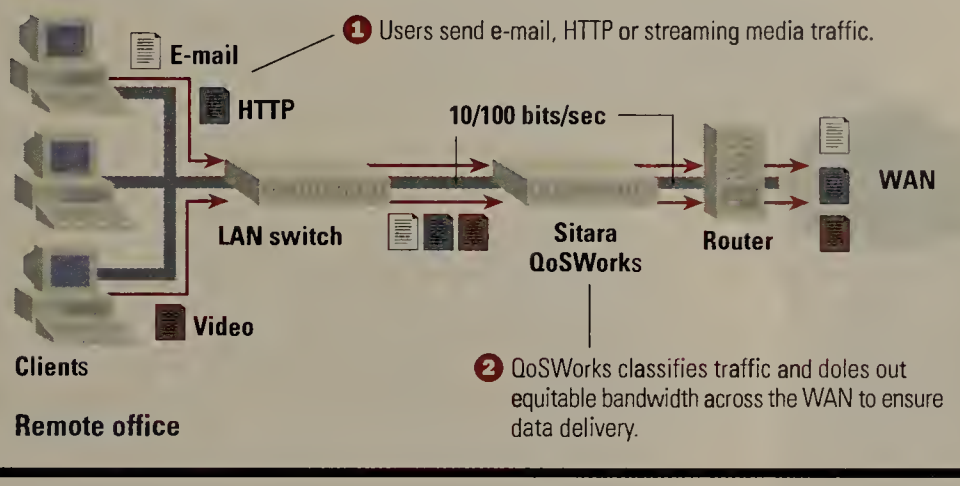
QoSWorks classifies traffic using four schemes: class-based queuing (CBQ), TCP rate shaping, packet-size optimization and an algorithm for fair allocation of bandwidth by connection.

CBQ classifies traffic and queues it based on that classification, while TCP rate shaping bypasses queuing by apply-

See **Sitara**, page 22

Traffic control

Sitara's QoSWorks bandwidth manager lets users control quality of service where network resources are scarce.



CNT device uses IP nets to store distributed data

BY DENI CONNOR

Network managers who want to vault data to a remote location over IP networks will be interested in software that Computer Network Technology (CNT) introduced last week.

In its first storage product to use IP, CNT is taking its UltraNet Storage Director, a high-speed switch, and copying data between EMC Symmetrix disk storage systems located across an enterprise network. At present, the firm only supports EMC devices, though it promises to support other vendors in the future. Previously, CNT transported data via dedicated, leased T-1, T-3, ATM or other communication links, which are more expensive.

Companies are starting to require IP-based communications for data warehousing, software distribution or data center migration, says Dave Hill, an analyst with Aberdeen Group in Boston.

User concern about copying data over IP does not affect applications that are not online transaction-processing system intensive, or do not have to happen in real time, Hill says.

For instance, copies of read-only Web site content may be distributed at multiple sites around the country. Or, data warehouses may need to be backed up only to the last time the data warehouse was refreshed.

While critical production data or financial information is not well-suited for IP transmission, less-time-sensitive data is. There is also a growing number of companies, such a those involved in Internet transactions, that insist on IP-only traffic.

"eToys is investigating the use of data replication over IP because it would enable us to use the 'bandwidth on demand' capabilities of IP-based networks to ensure high levels of avail-

See **CNT**, page 22

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Digital Fountain looks to bolster IP Multicast networks

BY JASON MESERVE

SAN FRANCISCO — Start-up Digital Fountain last week announced a content delivery mechanism that combines IP Multicast with special algorithms to deliver digital content to an unlimited number of users.

Founded by University of California at Berkeley math professors Mike Luby and Jay Goldin, Digital Fountain also announced the closing of $7 million in venture funding. And the company hired its first CEO — veteran IBM and Cisco executive, Cliff Meltzer.

The company's technology should let customers build scalable and reliable IP Multicast networks capable of supporting the distribution of large quantities of data or video from a single source.

Multicasting is more advanced than unicasting, which uses a centralized server and unique streams for each client requesting data from the server. Unicasting can cause network and server congestion under heavy user load.

"With multicast, stream replication is pushed to the edges of the network," says Meltzer. Stream replication reduces load on the server and congestion in the network.

But the problem with standard IP Multicast is that there is no inherent reliability built in to the protocol. Data is flooded on to the network in a single stream and recipients of the data "tune in" to receive it. To gain reliability with multicast, users must implement what's called a back-channel connection to the server that signals that the recipient is receiving everything properly. But too many back-channel requests can also bog down a server, limiting the scalability of multicast.

"We've survived unicast because most users are confined to 56K bit/sec dial-up connections, but as broadband takes off, [millions of broadband users requesting unicast streams] will cause a strain on the servers," Meltzer says. Multicast will be key to broadcasting data to these broadband users in an efficient manner.

Using a method it calls "randomized algorithms," Digital Fountain has developed a way to continuously multicast data — be it audio, video or a data file — across a network in a way that every packet being sent is unique. Recipients need only to pick up a certain number of packets, in any order, to replicate the file locally, Meltzer says.

Each packet contains random bits of information about the original file. Using Luby's algorithms, the decoder can recreate the data. "No one packet is critical," Meltzer explains. "You don't have to go back to the server if one packet is missing or out of order."

Using this technique, it does not matter when intended recipients join the multicast group — they will still receive the entire file, beginning to end. Users merely click an HTML link that sends 150 bytes of information about the file's encoding parameters to the receiver, and the rest is done under the covers.

Meltzer says all that is needed is about 4% more bandwidth above what it would normally take to send the stream without encoding. For instance, a file that normally requires 100K bit/sec of bandwidth would need 104K bit/sec under Digital Fountain's system.

To picture how the system works, take the example of a standard RealServer sending an audio clip, and a RealPlayer client receiving it. Digital Fountain's technology will typically reside on the same server as the RealServer and break the output into random packet chunks and multicast them across the network. A Digital Fountain client will reassemble the packets locally.

"There's no coordination between the receivers, and no additional infrastructure needed," Meltzer says. "You just have to have IP Multicast enabled on the network."

Most new high-end Layer 3 switches from Cisco, 3Com and Nortel Networks come with IP Multicast support, but the technology hasn't caught on as rapidly as backers would like (*NW*, Jan. 10, page 24).

"This is the first company that anticipates the impact on content delivery by widespread broadband access," says Michael Howard of Infonetics Research. "They have a clever breakthrough and application that uses esoteric math applied to a real problem [providing scalable and reliable multicast.]"

But good technology is only half the battle, Howard says. The key for Digital Fountain to be successful is to have good management and be able to execute.

Enter Meltzer. He has been brought in to lead the firm's business as it readies to roll out product later this year.

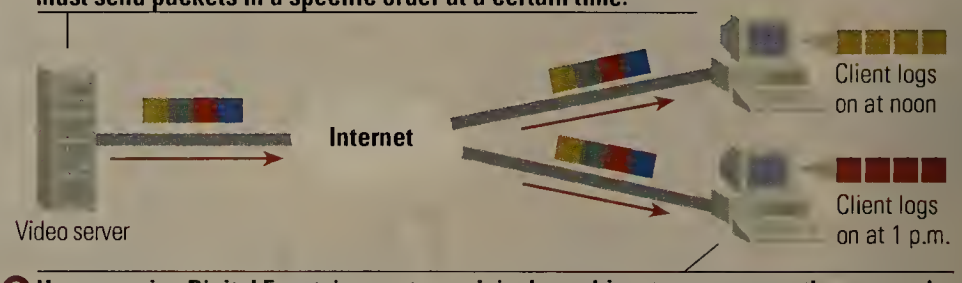
Meltzer spent seven years at Cisco, most recently as senior vice president of the company's IOS technologies division. Prior to Cisco he spent 16 years at IBM working on SNA and internetwork products.

Initial investors in Digital Fountain include Hambrecht & Quist Venture Associates, Adobe Ventures, Cisco, Sony and Texas Instruments. ◪

Random acts of videoconferencing

Digital Fountain's system gives videoconference users more flexibility than traditional IP Multicast.

1 **Digital Fountain's technology lets video servers continuously broadcast a stream of unique, random packets. Standard IP Multicast servers must send packets in a specific order at a certain time.**



2 **Users running Digital Fountain events can join the multicast stream at anytime to receive the entire broadcast. Clients can recreate the entire multicast file from any set of four random packets.**

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Nortel buddies up for multicasting

Buys $10 million stake in IP Multicast developer Talarian.

BY JIM DUFFY

SOUTHBOROUGH, MASS. — Nortel Networks has acquired a minority stake in Talarian, a developer of multicasting software for real-time data delivery, such as market feeds for investment and trading organizations.

Nortel invested $10 million in Talarian to underwrite a development effort to tightly integrate Talarian's software into its Accelar routing switches, Versalar routers and wireless gear, says Paul Callahan, Nortel's senior vice president of strategy and technology investments.

"We decided we better get ahead of the curve on this and build this software in," Callahan says. "The only way to make that stick is to put some skin in the game."

The Talarian software will show up first in the Accelar switches in "a matter of months," Callahan says.

Talarian and Nortel were brought together by the New York Stock Exchange (NYSE), a big Nortel account which also uses Talarian's software.

"They said, 'You guys need to get together,' " says Thomas Laffey, Talarian founder and chief technical officer.

"Data applications are making customer loyalty much more sticky than it has been," Callahan adds.

Nortel first contacted Talarian six months ago about a partnership. Talarian's software currently operates over a Nortel infrastructure at NYSE, but this arrangement will optimize the software for Nortel hardware, Callahan and Laffey says.

The deal is not wholly exclusive, but parts of it are, Callahan says.

A response to Cisco/Tibco?

The Nortel/Talarian union may be a response to Cisco's tight relationship with Tibco, another developer of multicasting software for real-time data delivery. Cisco has an equity stake in Tibco and some of its executive sit on the Tibco board.

"Nortel wants to have a competitive differentiator," says Ed Acly, an analyst at International Data Corp. in Framingham, Mass. "Eating off Tibco's plate wouldn't give that to them."

For Talarian, the Nortel deal means more visibility, more distribution channels and a ringing endorsement of the company's technology from a huge player. These upsides outweigh any potential downsides of the arrangement, such as cutting off any potential partnerships with Nortel competitors, Acly says.

"You're known by who you go to bed with vs. going to bed alone," he says. ◪

How to MOTIVATE a roomful of servers to "GO, FIGHT, WIN!"

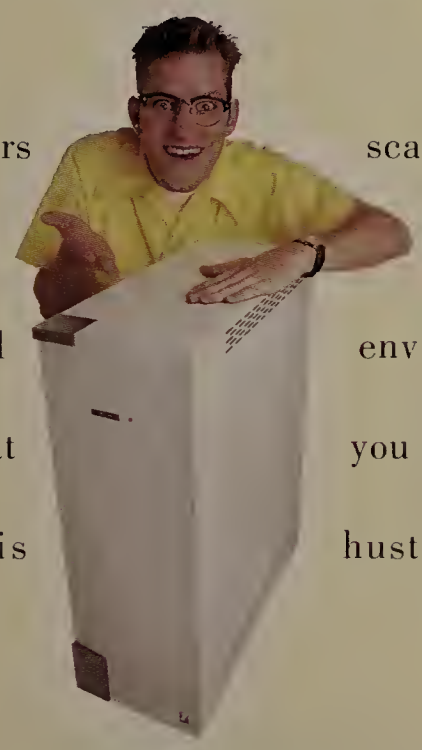
Option 1 the PEP TALK

It works for athletes, salespeople, plants – so why not servers? With a one-minute pep talk you can instill motivation, increase productivity, and turn everyday servers into unqualified "winners." Unfortunately, if you spent one minute with each of your servers, we may not see you for days. For quicker results, see option 3.

Option 2 the REWARD SYSTEM

If a server performs well, you can reinforce that behavior by giving it a treat. But be careful selecting the reward. Anniversary watches and champagne can be cost prohibitive, especially if you have untold throngs of servers. Fortunately, there is another tool to help you in the ongoing need to lead.

Option 3 the ENTERPRISE CONSOLE SWITCH



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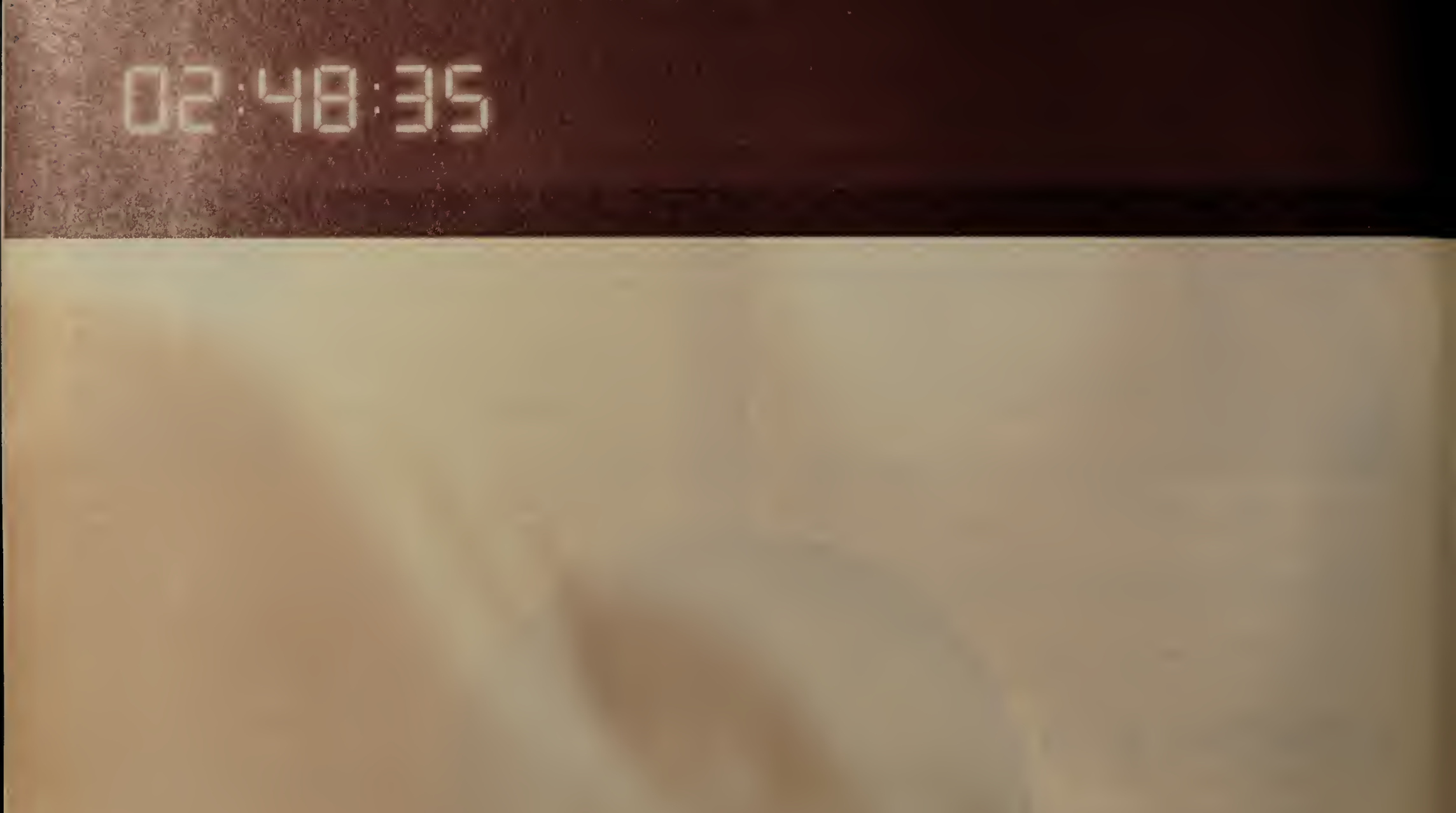

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A grandmother-to-be in Beijing.

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Marconi

Sitara,
continued from page 15

ing flow-control policies to individual traffic flows and classes of flows. Packet-size optimization manages latency by reducing the size of the packet; and fair bandwidth allocation doles out an equitable share of bandwidth for all connections within a class, so that individual connections do not time out.

These four methods are designed to guarantee consistent response time for latency-sensitive applications, and deliver granular control over bulk transfers such as e-mail and Web browsing.

QoSWorks also includes a caching feature for improving the response time for HTTP traffic and increasing network performance. QoSWorks' caching does not require reconfiguration of routers or browsers or deployment of a switch, Sitara officials say.

QoSWorks competes with bandwidth managers such as Packeteer's PacketShaper, Lucent's Xedia Access Point routers, and caching engines from CacheFlow. Sitara officials claim that QoSWorks is more full-featured than these products because the appliance combines rate shaping, class-based queuing and caching in one box, whereas competitive offerings rarely feature more than one of these capabilities.

QoSWorks also lets network managers avoid the costs and headaches of deploying multiple-point network performance products.

Pricing for QoSWorks starts at $3,000 for 64K bit/sec maximum throughput, $5,000 for 384K bit/sec, and $10,000 for 2M bit/sec. QoSWorks will be available later this month.

Sitara: www.sitaranetworks.com

CNT,
continued from page 15

ability of our Web site content," says Kayne Grau, director of technical services at eToys, a Web-based retailer.

The initial software application will let customers with EMC's Symmetrix Remote Data Facility (SRDF) mirror information across the Internet. With IP, companies can use as much or as little bandwidth as they need and pay less than they would if they were using dedicated, leased lines.

CNT's Ultranet Storage Director lets storage systems communicate over an IP network.

For IP traffic, the CNT UltraNet Storage Director connects to an EMC Symmetrix disk subsystem on each end of a link over the 'Net. SRDF data between the two Symmetrix subsystems is encapsulated by the UltraNet Storage Director in packets to transmit the nonstandard SRDF data from one system to another.

CNT is not alone in offering IP-based transmission of data across physically separated distances. LiveVault Corp., formerly known as Network Integrity, and Legato both have software and hardware applications that vault data from one location to another. Unlike CNT, however, they recommend leased lines for data transmission.

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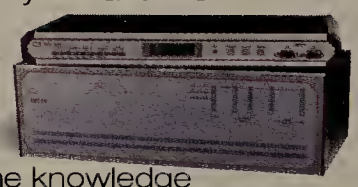

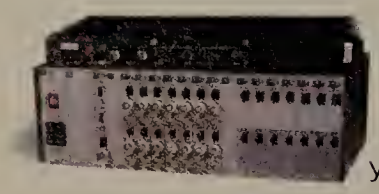

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Compaq servers target 'Net, Win 2000 users

BY APRIL JACOBS AND NANCY WEIL

With the introduction of its new servers, Compaq is targeting users in two hot areas — those interested in doing business on the Internet, and potential Windows 2000 customers.

For Internet business customers at smaller companies, Compaq announced the NcoServer 150 Standard Model and the NeoServer 150 Internet Plus. Compaq will offer packaged service softwarc, called CarePaqs, with the new servers, enabling small businesses to get up and running on the Internet quickly.

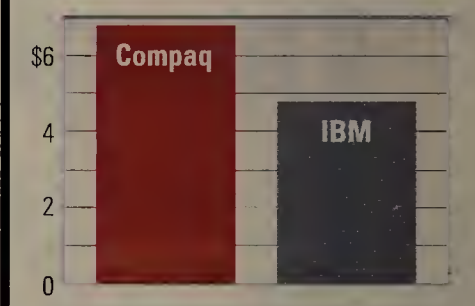
The NeoServer CarePaqs allow for file sharing, automatic data backup, intranets and Internet access, and provide a built-in firewall. The machines have a 500-MHz Intel Celeron processor and an on-board eight-port Ethernet hub.

Compaq is hoping to tap the entry-level server market, which grew by 10% in 1999 worldwide, according to International Data Corp. (IDC), a market research firm in Framingham, Mass. IDC attributed demand for entry servers to the need for front-end Internet servers and e-commerce engines.

Compaq leads in 'Net server sales

Compaq overtook IBM last year as the top seller of small Internet servers.

1999 worldwide entry server market revenue (in billions)



SOURCE: IDC, FRAMINGHAM, MASS.

The Internet Plus model offers a 56K bit/sec Version 90 internal modem. The box starts at $1,799, while the Standard Model 150 starts at $1,499. The new servers also support up to 100 users without an additional license fee.

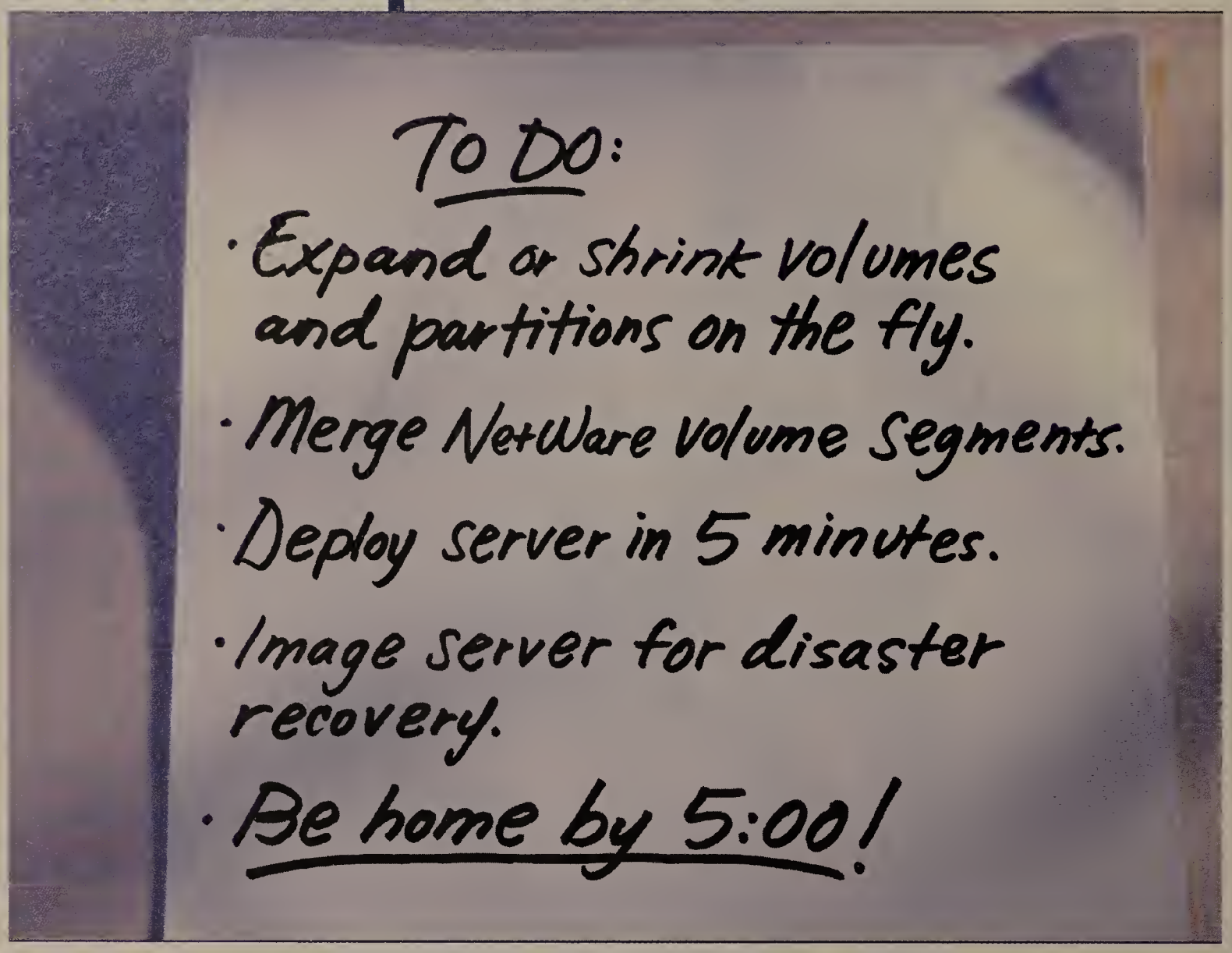
For potential Win 2000 customers, Compaq wants to give its ProLiant servers a competitive edge with features such as simplified management tools, security and better performance.

The company says it is trying to address the pressures businesses face when running e-commerce applications, Web sites and Web-based applications.

By using Compaq's hot-plug PCI capabilities, Win 2000 end users could add up to a tera-byte of storage to a network — without bringing the system down, says Mark Lewis, vice president of enterprise storage software business at Compaq.

The firm also announced new security capabilities for managing e-commerce sites. Using Compaq Trustmaster, a ProLiant server running Win 2000 will be able to off-load complex, processor-intensive cryptographic information needed for secure exchanges of information to a PCI-based card from Atalla, which would perform the tasks instead of the main server processor.

Weil is a correspondent with the IDG News Service.



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Simple Web Truth #3

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Wired Windows . Dave Kearns

NOS SHOWDOWN: WELCOME TO THE WILD WEST

Words are the tools of writers and editors, and — just like carpenters with saws or mechanics with wrenches — when the tools are misused the results can be disastrous.

By now, unless you've been asleep under a rock, you should be aware of the fallout from the Jan. 24 story in *Network World*, "King of the NOS Hill." If you haven't already, browse through the messages on the Network World Fusion Web site, in the "Which NOS is Best" forum.

To call this a "showdown" misrepresented the nature of the comparisons made, which included both objective performance testing as well as subjective evaluation of features of the various operating systems. In the Old West, a showdown was performance-based, in a real-world environment. Two gunslingers did not compare the features of their revolvers nor the decorations on their holsters. They drew down and shot. There was an objectively determined winner and loser. What we presented was not a showdown.

Within the article, two areas discussed were "stability" and "scalability." Most network managers understand stability to be a measure of how long the operating system will run without a failure. As such, an objective test could be designed. The authors, though, chose to look at fault-tolerance features and load balancing as indicators of stability. The Titanic was fault-tolerant, but it wasn't stable.

Scalability has developed multiple meanings, but when most network managers speak of scalability they mean how big a load the server will handle without degrading performance. The story's authors defined scalability as how many CPUs the operating system will support. But if a network operating system on one CPU outperforms one running on four CPUs, which is really more scalable?

A number of readers questioned the scoring and weighting of the subjective areas of the comparison. While the method used to score each area was not revealed, any reader could rework the weight given to the various areas to reflect their own judgment as to which parts are most important. These are highly subjective judgments, and the authors should have discussed how they arrived at the numbers they used.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

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Tip of The Week

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Briefs

Atlanta-based **EarthLink** has completed its $4 billion acquisition of **MindSpring.** Now EarthLink can supplement its dial-up ISP business with broadband access and Web hosting services, according to company officials.

Garry Betty, formerly president and CEO of EarthLink, will retain his CEO title, while Mike McQuary, formerly MindSpring's president and chief operating officer, will become president of EarthLink.

Global Crossing has begun selling 1.5M bit/sec Internet access over digital subscriber lines (DSL) in 31 U.S. cities. The company charges $410 per month for a Symmetric DSL connection, including Internet access.

The service is available in a number of cities, including Atlanta, Baltimore, Boston, Chicago, Cleveland, Tampa, Fla. and Raleigh, N.C. The company will add 14 more cities by spring.

Global Crossing: www.globalcrossing.com

A competitive local exchange carrier in the western United States is dumping its consumer ISP business so it can concentrate on the enterprise market.

GST Telecommunications last week sold its consumer Internet operations for $5.9 million to ClearData.net, a Phoenix Internet access provider that also offers server and applications hosting. GST also wrested a $25 million agreement from ClearData.net to buy GST network services over five years.

GST, based in Vancouver, Wash., provides voice and data services in 19 markets, mostly west of the Rockies but recently moving as far east as Houston.

GST: www.gstcorp.com

ASPs to jam with Jamcracker

Start-up partners with variety of service providers to offer secure application portal.

BY DENISE PAPPALARDO

SUNNYVALE, CALIF. — Jamcracker is teaming with multiple application service providers (ASP) to offer customers a range of applications that can be accessed via a single portal Web site, called Jamcracker Central.

Instead of rolling out its own application servers, start-up Jamcracker last week said it would team with ASPs that specialize in specific software technology. Jamcracker's services allow customers to easily access a multitude of applications from a single, secure Web site, which eliminates the need to support multiple clients on each PC.

Jamcracker has established partnerships with ASPs to offer business users e-mail, collaboration, human resources, customer relationship management (CRM) and financial applications.

The first ASP to partner with Jamcracker is Employease, which specializes in human resources application rental services. Jamcracker has also partnered with Ipass, an ISP that offers Internet access via local dial-up numbers around the world. Ipass offers a secure dial-up service that Jamcracker customers can use to access Jamcracker Central, but customers are not limited to using only Ipass services.

Jamcracker is focusing on customer management and monitoring tools, says K.B. Chandrasekhar, company CEO, chairman and co-founder. Chandrasekhar is also the former CEO and current chairman of Exodus Communications.

"Jamcracker provides users with a single sign-on portal for all of their applications."

K.B. Chandrasekhar, CEO, Jamcracker

"Jamcracker provides users with a single sign-on portal for all of their applications," he says. "We will not touch an application, or an ASP that will not fit this model."

Jamcracker has set up dedicated private lines between its data centers — which are collocated at Exodus hubs — where the firm manages customer accounts and monitors its ASP servers, Chandrasekhar says. In some cases, Jamcracker has also collocated management servers within partners' data centers, he says.

When customers log on to Jamcracker Central, they can not only access the applications to which their company subscribes, but they also can access pages that detail the performance of their application servers, view monthly billing information, fill out trouble tickets and check on the status of existing trouble tickets.

The combination of multiple ASP services and Jamcracker's management tools is a complex model that will raise questions about who is responsible for users' applications, analysts say.

See **Jamcracker**, page 32

Akamai snaps up streaming media content provider

BY DAVID ROHDE

CAMBRIDGE, MASS. — Web content distribution start-up Akamai Technologies last week dove deep into the field of streaming media by acquiring Intervu in a stock swap worth $2.8 billion.

The acquisition positions Akamai to offer companies with heavy-duty Web sites faster downloads to end users regardless of whether the content is primarily static Web pages or recorded video and audio material.

Akamai has quickly grown over the past year by taking Web sites' text and graphical content, including banner ads and Shockwave files, and off-loading them onto a network of about 2,000 servers collocated in 25 ISP networks in more than 40 countries. Akamai was chosen as one of *Network World's* "10 Companies to Watch" last year (April 26, 1999, page 73).

The basic concept behind Akamai's FreeFlow service is to put content closer to the end users trying to access it, though the exact formula for determining where content is replicated and supplied depends on complex algorithms developed by Akamai engineers.

Akamai had only begun to develop a streaming media offering for its clients and only succeeded in doing so for Apple's QuickTime streaming format, according to Joel Yaffe, an analyst at Giga Information Group, a consulting firm in Cambridge, Mass.

By contrast, Intervu creates streaming media files not only in Apple's format but also in Microsoft's Windows Media and Real Networks' RealVideo formats.

As a practical matter, Yaffe says: "in the past, anyone who wanted to use Akamai for streaming media would have to present Akamai with a streaming media file."

The acquisition also dramatically diversifies Akamai's customer base. Its 200 current customers consist largely of Web portals, print publications and various e-commerce sites, Jaffe says. Intervu, located in San Diego, adds a customer base of about 800 companies, including many television and film studios.

In addition, the transaction augments Akamai's network by adding Intervu's approximately one dozen "regional stag-

See **Akamai**, page 32

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Jamcracker,
continued from page 29

That's because Jamcracker doesn't own and operate the actual application servers, says Eric Klein, senior analyst at The Yankee Group, a Boston consulting firm. Jamcracker will not only have to monitor the performance of multiple application servers, but also will have to tend to the relationships with its multiple ASP partners.

"But Jamcracker is offering a unique feature," Klein says, explaining that business users who buy services from one ASP that offers e-mail, enterprise relationship planning (ERP), CRM or financial applications are not accessing these applications using one interface.

Some users may prefer to rent all their applications from a single ASP because they know the ASP has ultimate control over all their application servers.

But most ASPs are not yet offering business users detailed monitoring tools with which they can easily check the status of their servers or applications.

Potential customer Documentum is considering outsourcing to an ASP and will meet with Jamcracker soon, says Stuart Robbins, an IT executive at the Pleasanton, Calif., software company. The idea of integrating all the company's customer information onto a single application that's accessed through the Web makes sense, he says.

When asked if he has concerns about Jamcracker maintaining multiple relationships with ASPs in order to provide its application rental services, Robbins says business users would have similar concerns if they were rolling out a large CRM or ERP application in-house.

"Internal or external, there is an important need for strong partnerships that result in the delivery of reliable services," he says.

Jamcracker's services are available now and priced on a monthly per-seat flat rate. The per-user rate is based on the number of applications to which a company subscribes and the number of users accessing the applications.

Jamcracker: www.jamcracker.com

Akamai,
continued from page 29

ing hubs," where streaming audio and video is created and housed for customers. Under this concept, Akamai's servers will act as the "edge delivery" vehicle for end users employing Windows Media Player, RealPlayer and other multimedia programs to view Web broadcasts.

The acquisition, Akamai's second, is expected to close in the second quarter. The company last month paid $200 million in stock to acquire Network24 Communications, which makes software to manage interactive Internet broadcasts.

Akamai, which went public only three months ago, is in a good position to make even more acquisitions down the road. The company, which has posted losses of close to $50 million and revenue of $3.6 million while ramping up over the past two quarters, boasted a market capitalization of close to $20 billion last Monday, the day its latest acquisition was announced.

Akamai previously raised more than $40 million in venture funding from the likes of Battery Ventures and Polaris Venture Partners.

Akamai wasn't the only company in the Web content delivery game with audio and video streaming news last week. SitePath, which makes network appliances for enabling enterprise networks and ISPs to improve Web content delivery, announced plans to integrate Apple's QuickTime Streaming Server technology with its appliances.

www.nwfusion.com
FIELDING STREAMING
Primer: Streaming 101.
Report: Corporate sites reach out to streaming media.
How-to: Learn how to manage the media flow.
DocFinder 6827
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Here's to a faster Web site: the Compaq TaskSmart C-Series server.

Qwest jumps into VPN fray with CoSine buy

Carrier purchases $15 million to $20 million worth of CoSine equipment; VPN services expected by year-end.

BY TIM GREENE

DENVER — By year-end, users will be able to turn to Qwest for all things VPN, including services that take the hassles out of setting up secure Internet-based networks and drastically reduce capital costs.

Qwest last week made a deal to buy a rumored $15 million to $20 million worth of virtual private network gear from CoSine that the carrier will use to create VPNs within Qwest's network. Customers will just need to buy an access line to tap in to the VPN services.

While Qwest won't say exactly what its service plans are, a spokeswoman says the carrier plans to announce packages based on CoSine gear, also by year-end.

These services will likely include firewalls, as well as the ability for customers to monitor traffic in real time. Customers would be able to add and delete users from VPNs as well.

"You don't do this just for an experiment, you do this for a rollout," says Vinod Khosla, a venture capitalist with Kleiner, Perkins, Caufield and Byers who has invested in CoSine and who sits on the board of Qwest.

From the estimated size of the purchase, Qwest will be able to buy 15 to 20 CoSine boxes, enough to roll out VPN services to major cities nationwide, says Michael Howard, an analyst with Infonetics Research.

A big plus for users is that the VPN gear would reside in the carrier network, reducing the amount of investment that customers have to make in hardware when they want to set up a VPN, he says.

In addition, customers should find it easier to set up VPNs with business partners, Howard says. Because Qwest could set up the VPN, customers don't have to spend resources on it, saving time and money.

While a VPN service has its advantages, customers have to trust the security of the access link into Qwest's network because that connection would be unprotected by the VPN. The VPN encryption would create tunnels only between Qwest points of presence, securing data as it crosses the network.

CoSine's gear incorporates Network Associate's Gauntlet firewall, which supports site-to-site as well as dial-up IP Security encryption. The box can also be used to aggregate digital subscriber line traffic from multiple DSL multiplexers and drop it onto core routers or switches.

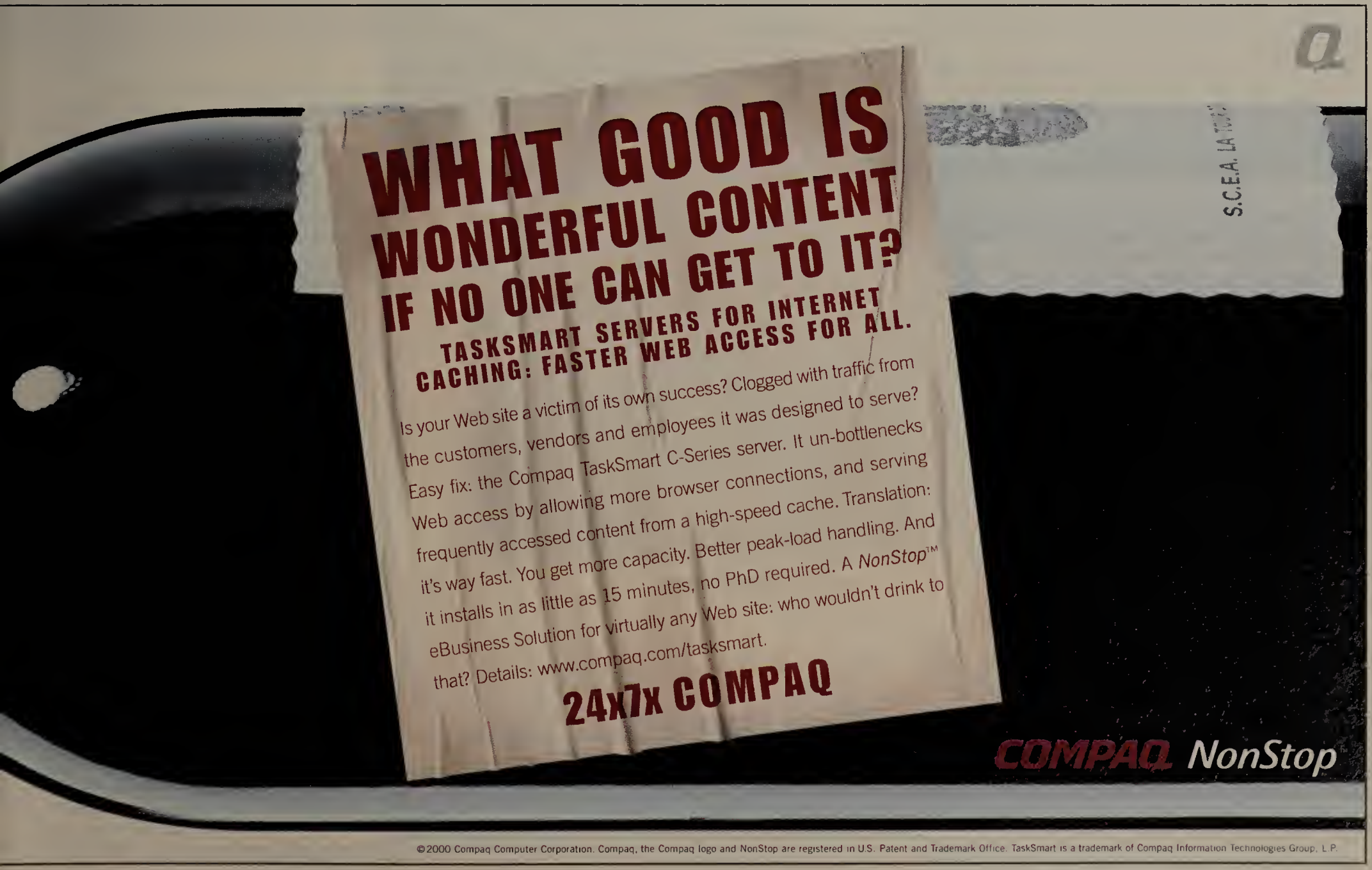
What's Qwest doing?

Qwest won't say what services it will provide based on its purchase of Cosine gear, but this equipment will support:

- Virtual private networks
- Managed firewalls
- Customer control of service features
- DSL aggregation

In addition to the IPSX 9000, CoSine's IP service platform includes service management software called InVision, which gives customers visibility into their VPN and lets them directly control user lists.

Customers could also submit firewall policy changes through InVision, but the change would have to be installed by a technician.◪



Wan Monitor . Daniel Briere and Christine Heckart

PLANNING IP-QOS IS NO DAY AT THE BEACH

Imagine organizing a two-week vacation for a few of your relatives to "Borazakhstan."

In case you didn't know, this is the latest hot vacation destination located halfway between Bora Bora and Kazakhstan. Some people say it's an island paradise, but for all you know Borazakhstan might be a mountainous former war zone in the process of being reconstructed as a ski resort.

To make matters worse, imagine having to accommodate the different needs of your guests: two aunts, Jackie and Janet, who have completely different tastes and standards of living, and Uncle Vinnie and Uncle Don who haven't talked to each other in 20 years. A combination like this could bring up more issues than simply deciding where to dine.

It's not too much different than trying to plan for IP quality of service (QoS) in your corporate network. This, too, can pose a number of issues.

The first issue is the multiplicity of IP-QoS implementations and protocols. For your LAN, you can opt for Resource Reservation Protocol (RSVP), Differentiated Services (Diff-Serv) or Common Open Policy Standard (COPS).

Then you have to face the problem of interoperability among different products. Vendors still need to resolve the issues associated with translating, or mapping, the traffic prioritization attributes of one QoS technology to another so that traffic flows across diverse networks will be efficiently prioritized.

You have to connect your LANs to a service provider network. This service provider will offer service-level agreements, which alone are insufficient when you have QoS needs. What you need is policy management. Unfortunately, carriers have been hesitant to introduce the concept to their large native IP networks.

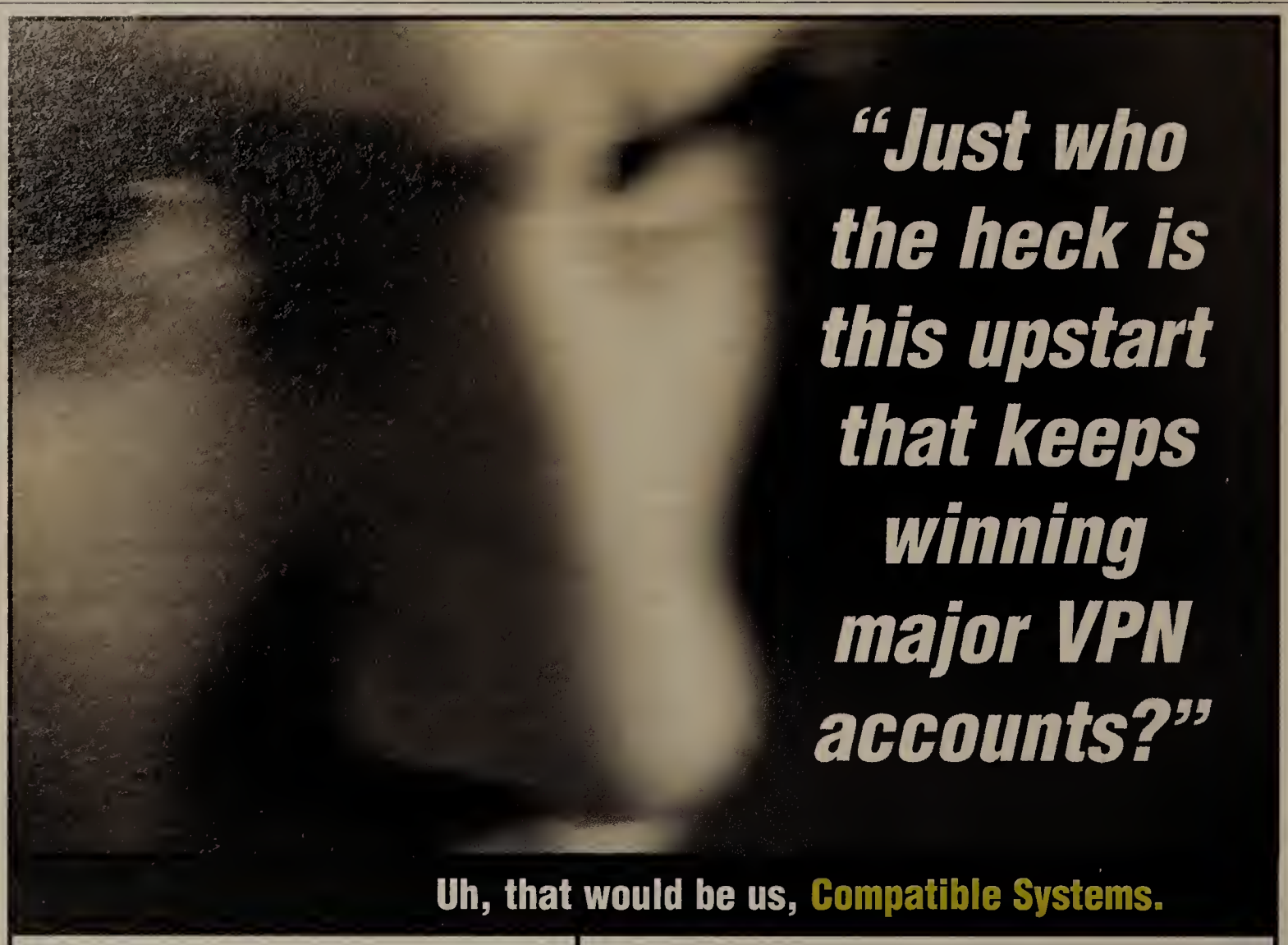
Internally, you need to start by using the traffic analysis tools available today. These will let you provision the right amount of bandwidth, perform some traffic shaping and prioritization, and deal with bursty traffic problems.

Good reporting features are also needed, so you can analyze internal traffic and determine how the traffic is handed off to the service provider. Remember that these tools will provide good support but will remain limited when considering true QoS.

If you really want to start testing some IP-QoS tools, start by looking at Diff-Serv and COPS-based products.

Externally, you will face service providers offering ATM-based IP services, and some "all-IP" providers offering a new IP-QoS service for the enterprise. As you compare ATM-based IP services against pure IP solutions you may find that the ATM-based solutions are slightly more expensive. But at least for the time being, the ATM-based services may offer you better QoS technology for supporting a combination of traffic types with different prioritization levels. Determining your exact needs before implementing IP-QoS in your network will ensure an enjoyable trip for all.

Briere is president and Heckart is vice president of TeleChoice, a consultancy in Boston. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.



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Briefs

Network Associates next month plans to ship a Windows NT-based security management console called the E-Policy Orchestrator. The software lets network managers set individual end user security policies on Network Associates products, such as the desktop Norton AntiVirus software and the WebShield Internet gateway security device. Pricing for the E-Policy Orchestrator has not been set.

Network Associates: www.nai.com

WebTrends has started shipping its Firewall Suite 2.0, which adds SurfWatch's content-filtering software to keep corporate employees from accessing Web sites catering to gambling, hate, violence, sex or drugs. Version 2.0 of the product, which is priced starting at $2,000, now also includes tools for determining how much it costs a company to use the Internet.

WebTrends: www.webtrends.com

Sun and **InterWorld** are teaming up to offer a set of hardware and software technologies designed to help retailers get e-commerce systems up and running. The companies' Retail Essentials offering includes Sun Solaris and Sparc-based hardware, as well as software from InterWorld that helps companies sell products online and establish complementary customer service systems.

Sun: www.sun.com/retailessentials.com

Former Netscape Chief Operating Officer Barry Ariko has been named president and CEO of **Extricity Software**, a Redwood Shores, Calif., maker of business-to-business e-commerce software.

New ASP twist: Mgmt. service providers

Vendors want to take over corporate net management chores; targeting small and midsize firms.

BY JEFF CARUSO

You've heard of application service providers (ASP). Now get ready for a wave of management service providers.

Strategies vary, but mostly these companies monitor and manage their customers' networks and systems, looking for problems. Like ASPs taking on application headaches, these companies take on IT management headaches.

At a time when qualified IT personnel are difficult to find and management software is often difficult to use, the idea of making it all someone else's problem is becoming more attractive. Gartner Group analyst Stephen Elliot says the market for these services should reach $2 billion by 2003. The size of the opportunity has resulted in a recent explosion of management service providers, including @Manage, InteQ, NetSolve, ProactiveNet, SilverBack, SiteRock, StrataSource and TriActive.

Part of the draw for enterprises is that management service providers can have IT personnel monitoring customers' networks round the clock, says Paul Holden, director of technology infrastructure and support at Sedgwick Claims Management Services. His company's WAN is monitored by NetSolve.

"NetSolve knows about network problems before our clients or our internal colleagues even notice," Holden says, adding that NetSolve typically notifies Sedgwick within a minute of any network service degradation. "That responsiveness is very important to us."

Gartner Group's Elliot points out that subscribers to management services no longer have to worry about building, training and retaining an IT staff. The services probably will appeal most to small and midsize companies that don't have the resources to maintain their own IT staffs.

Starting small

As with ASPs, however, many management service providers are still just trying to earn their first customers. InteQ, for example, claims three early adopters for its service, and SilverBack says it will announce some customers when the company officially debuts at the end of the month.

Enterprises may be reluctant to give up control of their networks, especially since networks are becoming critical to their success. But in many cases, the management service providers simply gather information and point to potential problems.

See **Management**, page 42

Net management for hire

These companies are all evolving as management service providers:

Company	Business angle	Web address
@Manage	Uses its own Web-based tools.	www.amanage.com
InteQ	Sells management services through other service providers.	www.inteqnet.com
NetSolve	Specializes in WAN technologies, such as frame relay, ATM and virtual private networks.	www.netsolve.com
SilverBack Technologies	Takes data from different management tools, and presents it all in one format.	www.silverbacktech.com
TriActive	Brings Tivoli's systems management to midsize companies.	www.triactive.com

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Billing system targets 'Net content providers

BY CAROLYN DUFFY MARSAN

FRAMINGHAM, MASS. — As the pressure mounts for e-businesses to start making money, network managers are being called on to help their companies track the financial aspects of the complex content and revenue sharing arrangements that have become commonplace on the 'Net. Enter TeleKnowledge, a Framingham, Mass., startup that has developed a billing system for Internet content and service providers.

Version 2.0 of TeleKnowledge's Total-e billing software uses a flexible, modular approach that is easy to adapt for IP-based services. The system has general-purpose ordering, billing and customer care components that can be customized with software plug-ins for portals, syndicators, advertisers and others.

"Lots of companies are worried about how content physically gets packaged, syndicated and delivered to business partners. We're worried about the business issues: how you calculate and reconcile the financial relationships," says Chris Huff, a TeleKnowledge vice president.

Huff says traditional telecommunications billing systems are designed for single services — such as local or cellular telephone service — and can handle flat-rate and usage-based billing for customers. However, new Internet services require value-based billing systems that can assess charges based on the quality and timeliness of the service.

"There are unique and interesting applications that are coming onto the Internet — particularly in the business-to-business space — that require novel ways of billing," says Peter Sevcik, president of Net Forecasts in Waltham, Mass.

See **Billing**, page 42

Measuring application implications

EcoPredictor allows application developers and network managers to play "what if."

BY BOB CURRIER

Is your newly deployed network application not performing as expected? Pinpointing the source of poor performance when you've already got an enterprise application up and running can be an exercise in frustration for the application development team and the networking staff. Compuware's new predeployment response-time analysis tool, EcoPredictor, goes a long way in getting to the root of poor application performance well before it becomes an issue.

We put EcoPredictor 3.0, which Compuware picked up as part of its recent acquisition of CACI Computer Products, to the test and found it to be quick, effective and easy to use. Despite limited documentation and Sniffer-centric importation facilities, we recommend that you take a look at this package prior to rolling out your next network-intensive application.

NetworkWorld REVIEW Network Management

EcoPredictor lets network managers and application developers understand the way client/server applications use network resources prior to deployment. Using the canned data supplied with the product or data captured from your own network and imported into the EcoPredictor application, you can build "what if" scenarios that point out potential bottlenecks in an application or on a network. For example, what if you wanted to measure the impact of connecting 50 additional users to a remote site connected by a 64K bit/sec frame relay link? Test these conditions first using EcoPredictor and watch the application response time increase dramatically as the link overloads.

When you initialize EcoPredictor, the application displays a tree structure of the transaction library that ships with the product. The library gives you a variety of sample traffic, such as source, destination, packet size and protocol type, and includes data from enterprise resource planning applications, such as SAP, Baan and Oracle.

If the application you're testing was developed internally, EcoPredictor provides an import mechanism that loads captured application data. We found the importation feature to be somewhat restrictive, as the only format currently supported is Network General's Sniffer. The ability to import text files or Microsoft Excel spreadsheets would let you use other capture utilities, such as tcpdump, snort or Etherpeek.

Once you select a data source, a transaction script window appears that details the conversation stream between the client and server nodes. Source, destination, application "think time," packet size and protocol type are displayed and fully configurable. The ability to tweak the sampled data prior to analysis is useful because you don't need to capture more data again after changes have been made to the network or the application.

The "what ifs"

Once your data is set, you can begin the "what if" analysis. EcoPredictor's charts show packet size distribution, response-time analysis and sensitivity analysis. The sensitivity analysis feature is what makes EcoPredictor shine. Networked applications react very differently depending on the number of users and the speed of the network. Being able to make changes and observe the results in real time is extremely useful. This product lets you change bandwidth settings, utilization settings, latency and network types.

EcoPredictor's reports are also well- done. Tables are provided in all analysis areas, and the information is easy to read. We were particularly pleased with the ability to export a chart as a JPEG file simply by right-clicking on the report. Another nice touch was the context- sensitive mouse pointer. Numerical information is displayed in a window under the mouse pointer after several seconds of mouse inactivity, which keeps you from having to switch to table view to get numerical data. EcoPredictor also provides an HTML export function, which makes it easy to produce Web-based reports.

Performancewise, EcoPredictor is quick. We didn't notice any significant delays in response on any of the machines we used to test the application. EcoPredictor is written in pure Java and runs on Windows and Unix platforms.

Installation and documentation

EcoPredictor was a snap to install. We loaded the CD and were up and running within five minutes. Documentation, however, is EcoPredictor's weakest point. The application comes with a slim, 41-page manual. Although it is well-written, the manual leans heavily toward installation, data importation and menu explanations. There were no case studies or "how to" examples included. This is a significant omission for a program that has so many adjustable parameters.

EcoPredictor was easy to install, performed well and provided clear reports. While not a full-fledged simulation package, it would make a useful addition to the arsenal of an application developer or network manager.

Currier is director of data communications at Duke University in Durham, N.C. He can be reached at robert.currier@duke.edu.

NetResults

EcoPredictor 3.0

Compuware
(858) 824-5200
www.comnetpredictor.com/ap2_main.cfm
$24,500

Pros

- ▲ Smooth installation.
- ▲ Good performance.
- ▲ Easy to play "what if."

Cons

- ▼ Lack of case studies and "how to" documentation.
- ▼ Limited importation abilities.

ScoreCard

EcoPredictor 3.0	
Features (40%)	8
Administration (35%)	9
Performance (10%)	9
Installation (10%)	10
Documentation (5%)	4
Total score	**8.45**

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score**.

Currier is also a member of the Network World *Test Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Test Alliance information, including what it takes to become a member, go to www.nwfusion.com/alliance.*

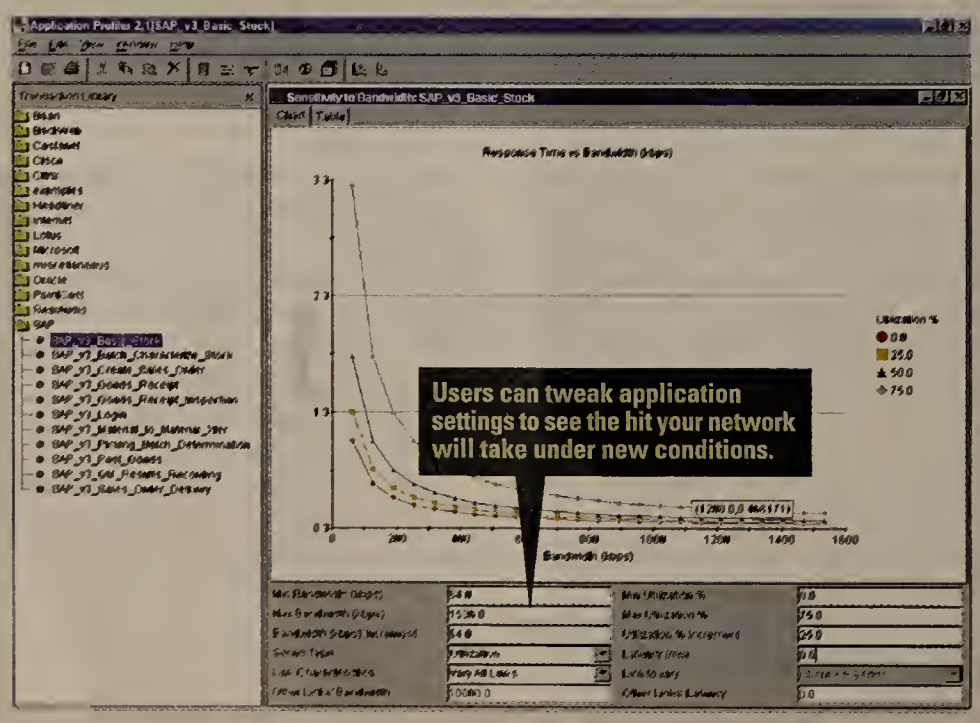
NetworkWorld TEST ALLIANCE

How we did it

We installed EcoPredictor on a Dell Optiplex GX1 machine with a Pentium III 500-MHz processor and 256M bytes of memory, running Windows NT Workstation 4.0. We also installed EcoPredictor on a Toshiba Equium 7100D with a Celeron 333-MHz processor and 128M bytes of memory running Windows 98. We worked through a variety of scenarios using the supplied application data from Compuware and tested the effects of changing link speeds, user count and latency.

The application "what if" game

Compuware's EcoPredictor lets users play out the effects an application may have on their networks.



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MOTOROLA EMBEDDED SOLUTIONS

Management,
continued from page 37

"We do not take ownership of the problem itself," says Santhana Krishnan, CEO of InteQ. "We'll just keep an eye on it for customers."

One management service provider, @Manage, offers a Web-based tool it developed. Clients provide access to their networks via a virtual private network and give @Manage device information and IP addresses, says Paras Gupta, the company's president and CEO. Remotely, @Manage's software collects data from customers' network devices, using Simple Network Management Protocol. Clients then can view their network performance data and alarms over a secure connection.

SilverBack also developed its own Web interface, but it works in conjunction with management software that resides at the customer site. That way, if the link between SilverBack and the site fails, the client can still use the management software on-site, says Skip MacAskill, vice president of marketing at SilverBack.

The company's Web interface can receive information from disparate management applications and present it all together, MacAskill says. This insulates customers from the complexity of having multiple management applications, he says.

Some of the management service providers use a particular management platform. InteQ, for instance, primarily uses Hewlett-Packard's OpenView and IT/Operations, in conjunction with some systems management components from BMC Software.

At this point, much of the outsourced network management services center around a company's WAN connections, or its Web site. Sedgwick Claims' Holden says his company still retains control of the LAN portion of its 64 locations throughout the country. In the future, however, he says he might be willing to hand over control of some of his larger sites to a management service provider.

Holden says that not having to deal with his frame relay carrier is liberating. "Having NetSolve manage the carrier gives us the freedom to do our own core business," he says. ◪

Billing,
continued from page 37

"TeleKnowledge has developed the most flexible approach to billing. . . . This can give service providers an edge in being able to invent and tailor billing to new IP services."

The flexibility of Total-e is what attracted Broadserve.com, a Garden City, N.Y., start-up that plans to deliver a suite of broadband services, such as video-on-demand, videoconferencing and voice over IP, via the Internet.

"We needed to have a billing platform that supports IP services," says Meir Koren, CEO of Broadserve.com's Israeli subsidiary. "We would like to provide a bill based not on the length of a conversation but on the number of frames delivered or how long it took to transfer the packets. We need to have varied solutions to billing our customers."

Koren says Broadserve.com is creating plug-ins to Total-e for each service it offers, and that each plug-in is taking only a few days to create. "Usually it takes months and months to implement a billing system for a different service," he says.

Total-e is server software that runs on Unix, Windows NT and Oracle 8. Version 2.0 features a software developers kit and a wizard utility that makes it easier for users to create new plug-ins. Pricing for the software starts at $500,000.

So far, TeleKnowledge has eight installations of its Total-e system and has raised more than $25 million in venture capital. The 75-employee company plans to go public next year.

TeleKnowledge: www.teleknowledge.com

www.nwfusion.com

THE CHECK IS IN THE MAIL

Overview: TeleKnowledge's billing product.

Report: The obstacles of 'Net billing.

Resources: Find out about other vendors' billing products.

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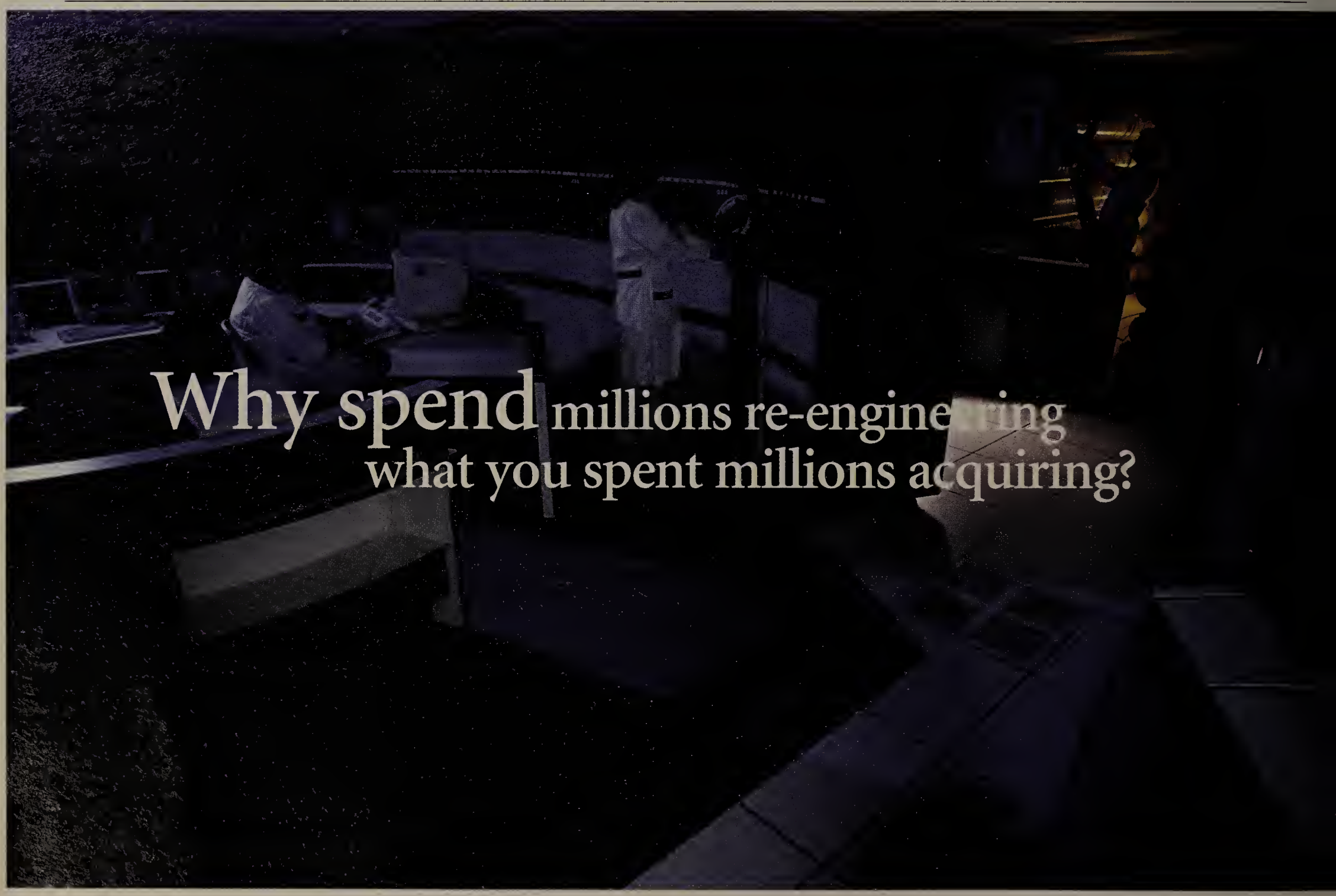

Sybase package targets enterprise Web portals

Enterprise Portal includes Sybase database and application server, plus a host of third-party applications.

BY JOHN COX

EMERYVILLE, CALIF. — Sybase next month will begin shipping a software collection that addresses one of the toughest jobs facing companies today: forging connections between end users, the enterprise Web and back-end applications.

Sybase's Enterprise Portal includes programs for building a main Web site for internal and external users — often called a portal or gateway — that provides access to data and applications sitting on mainframes and other back-end servers as well as to private and public Web documents. A complementary set of tools lets end users tailor the Web site's information and interfaces to meet their specific needs.

Sybase has built Enterprise Portal so that it can run on clusters of servers, and shift connections and users automatically if a server or network link fails. The software is also designed to handle high traffic volumes.

"Portals become a critical entry point for an enterprise and its users and customers," says Robert Breton, a senior director with Sybase's enterprise solutions division. "As a result, we wanted to have technology for load balancing, failover, data protection and so on, all built into the core product."

The package's versatility is due in large part to its accommodation of third-party software plug-ins, including those from a dozen vendors that Sybase last week said have pledged their support for Enterprise Portal. In addition to Sybase's own database and application server technology, Enterprise Portal includes the Apache Web server, publish/subscribe technology from Tibco and e-commerce software from Vignette, among other third-party offerings.

"They've created a very open architecture, so you can integrate an array of other systems, databases and data held in enterprise resource planning and other enterprise applications," says Alan Goldman, a senior analyst with Harvard Research Group in Boxborough, Mass.

One early user is RadMD.com, the San Bruno, Calif., division of National Imaging Associates. Managed care companies, such as United HealthCare and Blue Cross/Blue Shield, contract with RadMD to assist doctors in deciding what kinds of diagnostic imaging tests to order for patients. RadMD is building a Web portal, based on Sybase's offering, to make such guidelines accessible to doctors via Web browsers.

"Enterprise Portal will let physicians access these services from any kind of browser device, 24 hours a day, in addition to using our call center," says Robert LaGalia, RadMD's senior vice president for e-business. "We like Enterprise Portal because it's a common gateway for any kind of access path." By December, users of handheld computers and personal digital assistants also will be able to access the site.

RadMD will use the Sybase software to target specific information at different groups of physicians. Cardiologists, for example, likely will want to see data on congestive heart failure and buy cardiology supplies. Using Sybase's personalization tools, RadMD can match information with the appropriate audience.

Pricing information on Enterprise Portal, which runs on all major Unix operating systems and Windows NT, will be released next month.

Sybase: www.sybase.com

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Neoware to launch Linux, Windows CE thin clients

BY JOHN COX

KING OF PRUSSIA, PA. — Neoware Systems is readying two lines of thin clients, one that runs a stripped-down edition of Linux and one that runs Microsoft's Windows CE.

The thin clients will be offered as Internet devices designed to handle specific tasks such as Web browsing and e-mail exchange.

Neoware has developed its own embedded version of Linux, based on Red Hat Software's distribution of the open source operating system. Neoware's Linux runs without a hard disk and in just 4M bytes of flash memory.

Neoware plans to roll out its first thin client based on the embedded Linux this month. The firm recently demonstrated a pair of Intel X86-based computers running the software and assorted applications. One ran as an "Internet kiosk" — a device supporting a Netscape Web browser; the second had additional software to let it access applications running on a Windows NT server.

Neoware's new thin clients will feature 10/100M bit/sec Ethernet and other ports.

Neoware's basic thin-client package includes a keyboard and mouse, a book-sized system box that stands vertically and a 10/100M bit/see Ethernet interface. The box will have two USB ports, two serial ports and a parallel port. A PCI slot will support other peripherals.

Neoware plans to license the software to other device manufacturers, which will be able to incorporate it as the operating system for firewalls, routers, Internet kiosks or point-of-sale systems, says Michael Kantrowitz, Neoware's executive vice president.

In effect, Neoware has created a hard Linux kernel that can run invisible to end users. One innovation by Neoware involved changing the operating system so an appliance can simply be switched off; users no longer have to go through several steps to shut down the software, as they do on PCs and servers.

Neoware is not alone in taking Linux into the thin-client market. IBM recently announced support for Linux on its Network Station thin clients.

Neoware will also release a line of Windows CE devices, Kantrowitz says.

"Some customers want an end-to-end Windows product line," he says. "And we'll give them that choice."

Neoware also will release an improved version of its server-based management software, which will let companies monitor and control Neoware devices over LANs or WANs. Managers will be able to collect inventory information about the software on each device and download new software versions over networks.

Neoware: www.neoware.com

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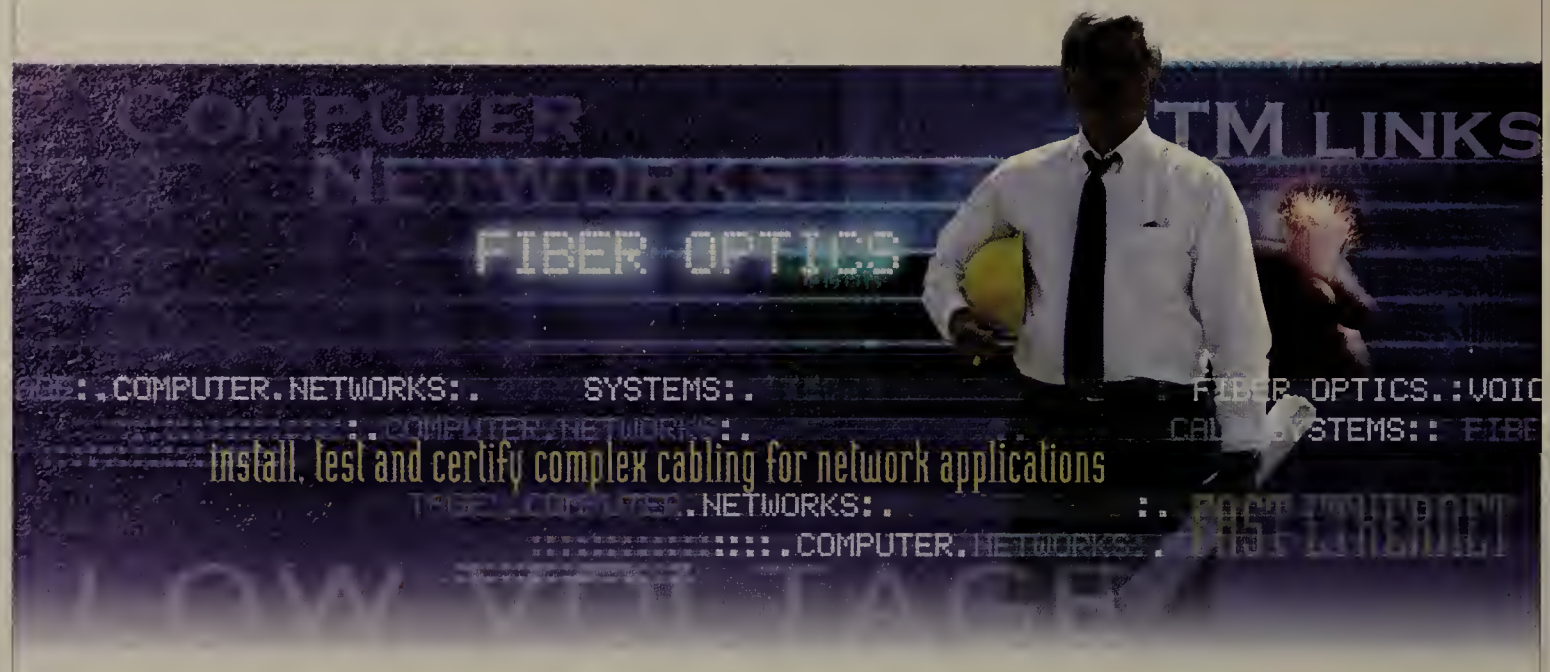

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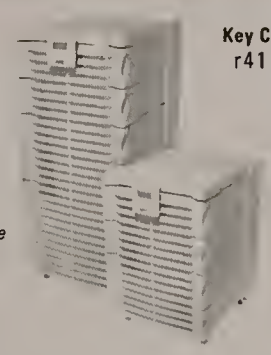

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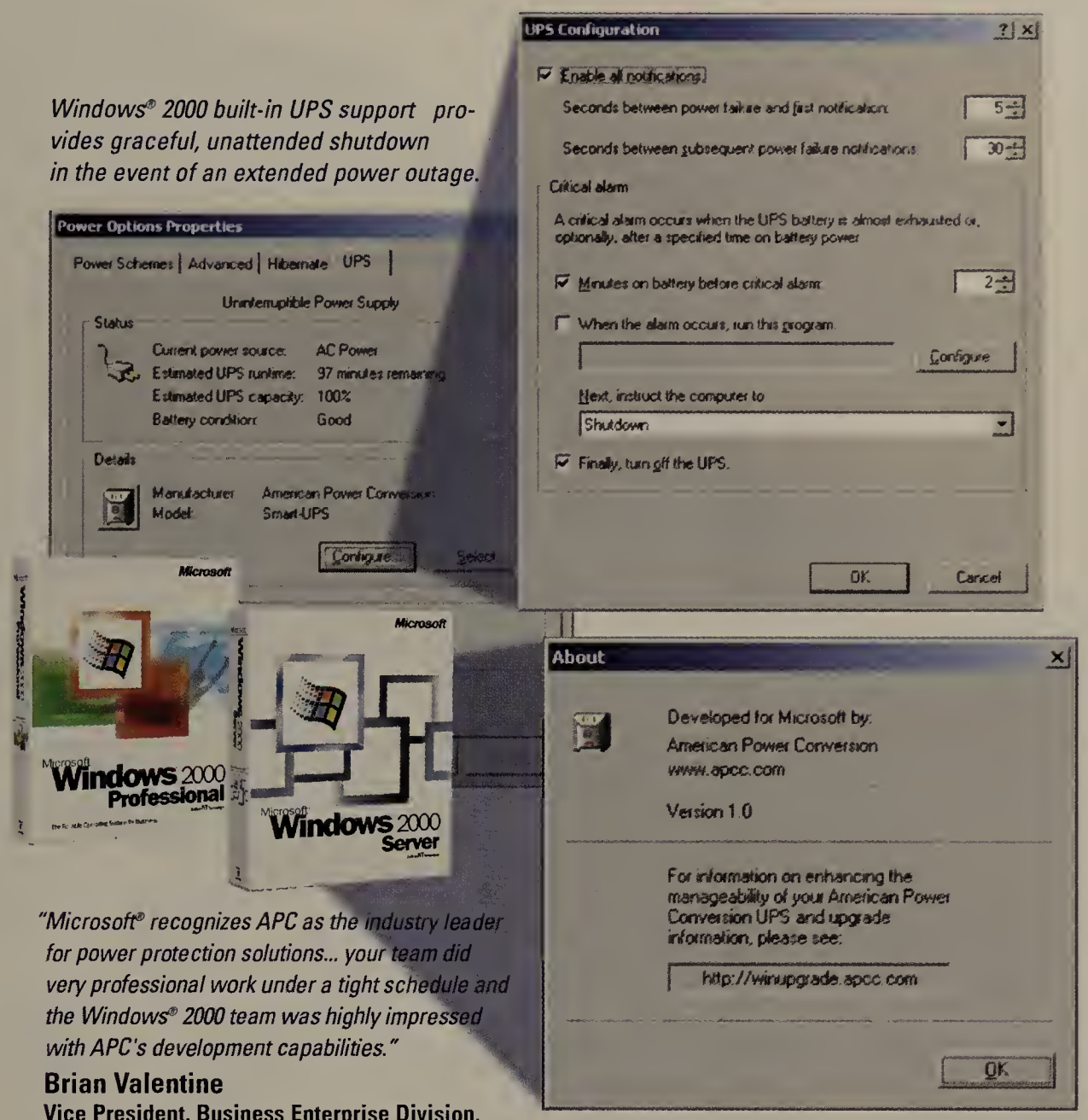

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'Net Insider . Scott Bradner

THE PRESS, DVDS AND CONSUMER NONPOWER

Well, that will teach me to rely on the mainstream press for accurate reporting!

I have received some rather pointed corrections on some of the details that I used in a recent column about DVDs and the DeCSS program, software found on Web sites that is designed to circumvent the copy protection of DVDs (*NW,* Jan. 31, page 38). The corrections did not affect the basic message of the column: that making it harder to see if protection systems — such as encryption — work well is counterproductive if someone actually wants to protect something. But the corrections did address two "facts" that I mentioned in passing.

In the column, I wrote: "Material on DVDs is encrypted to prevent unauthorized copying." While this is true in the context that I had in mind (being able to copy a song from a DVD onto your disk), it is not true if you want to copy the whole DVD because you can just do a bit for bit copy. A number of readers pointed to my text as incorrect.

Another thing I wrote in the column was that two judges had ruled that the posting of DeCSS had violated the Digital Millennium Copyright Act. I relied on the mainstream press for that information and that information turned out to be incorrect, as was pointed out by a number of readers with varying degrees of eloquence. It turns out that the California judge ruled that DeCSS violated the California Trade Secrets Act and not the Digital Millennium Copyright Act. (The judge's decision is at www.opendvd.org/cv786804-granted.html.) I don't have a pointer to the New York judge's decision, but one reader wrote that the judge ruled the software was an unlicensed DVD reader and that was illegal.

I found out a lot about DVDs and their encryption scheme from the readers' letters and from www.dvddemystified.com/dvdfaq.html (which contains more information about DVD that any one person should ever need to know). Basically the encryption is to prevent playing DVDs on players that have not been licensed by the DVD Forum. So the forum gets money from you when you buy the player and when you buy the DVD — sounds like a good deal for someone.

DVD makers also encode a "regional code" into their products that can restrict where a particular DVD can be used, so a U.S.-bought DVD will not work on a player built for the French market.

I doubt most consumers would consider these DVD features all that good for them — they limit the competition for DVD players and limit the flexibility of buyers to use DVDs they paid for where they want to use them.

But you can bet that these features foreshadow what content providers would like to do on the Internet — and they will succeed if consumers let them.

Disclaimer: Harvard is full of features, some as useful as those above. But this is my own opinion of feature-itus.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

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CIM about to make dramatic entrance

BY JEFF CARUSO

NETWORK MANAGEMENT

Windows 2000's support for Common Information Model will be key.

The Common Information Model (CIM) is a technology that so far has been relegated to backstage — but vendors claim key developments in coming weeks will hurry CIM into the spotlight.

One of the most important events is this week's formal release of Microsoft's Windows 2000, which will support CIM. Another is the first real interoperability tests among different vendors' CIM implementations, expected to be held next month.

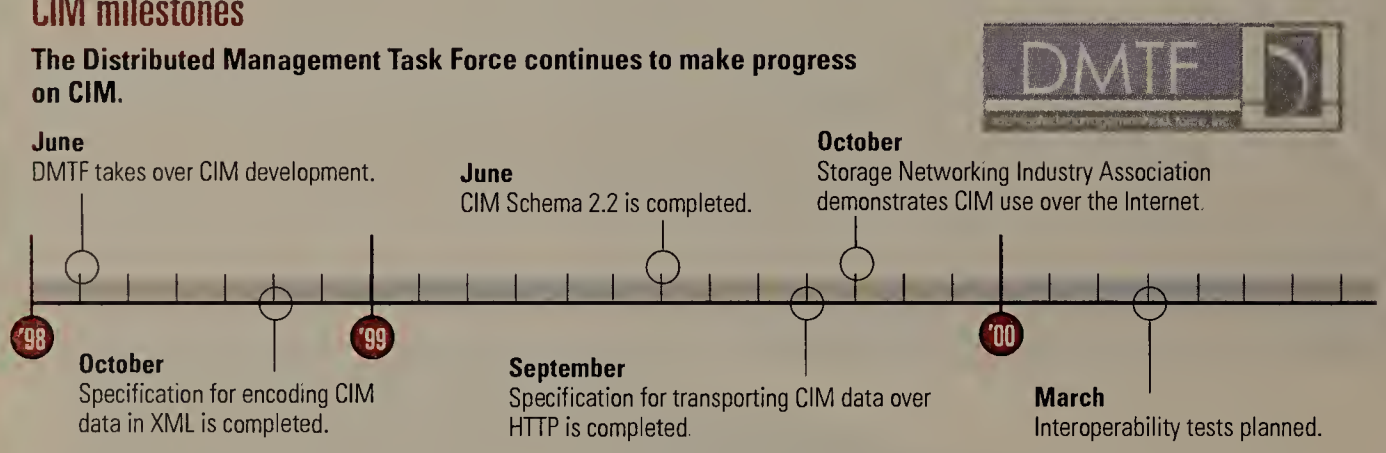
Developed by the Distributed Management Task Force (DMTF), CIM is a standard way of representing management data. It provides a format for representing information about network devices, systems, applications and other objects normally managed through management software tools.

The DMTF has also developed specifications to express CIM data using XML, and to transport the data using HTTP. The result is that the management data contained in a CIM file can be retrieved using Web technology. Together, these technologies are part of the Web-based Enterprise Management (WBEM) initiative.

Because the data is in a standard format, management tools can more easily exchange data, even if the tools are made by different vendors.

CIM milestones

The Distributed Management Task Force continues to make progress on CIM.



Window on Windows

Of course, CIM is only valuable if a lot of devices and applications use it. Microsoft's move to put CIM into the new version of its operating system is viewed by many as a crucial step, because wide deployment of Win 2000 will mean wide deployment of CIM.

"We're going across the platform and instrumenting everything to CIM," says Casey Kiernan, director of distributed management at Microsoft. The processor, the BIOS, the memory, the device drivers, Active Directory, the file system, the operating system event log — information from all of these elements is communicated to the Windows Management Interface, which in turn provides the information to the outside world through CIM.

Other management software vendors are already looking to take advantage of Windows' CIM support. "Windows 2000 is a flash of opportunity for us," says Bob Quillan, Manage.Com's vice president of marketing. The start-up plans to use CIM to manage Microsoft's Internet-related software, such as Site Server and SQL Server.

Microsoft plans to include CIM in the upcoming consumer release of Windows, the Millennium Edition, for customer support. When a user contacts a technician with a problem, the technician can get information about that user's computer and applications through CIM.

The real test

Another critical step for ensuring CIM's widespread acceptance is making sure different devices and applications can effectively communicate using CIM. Next month, the DMTF plans to hold interoperability tests among 15 to 20 vendors at Cisco's headquarters, says DMTF President Winston Bumpus.

The event will be closed to the public, allowing engineers from the various companies to work out the kinks in their implementations. Bumpus expects makers of computer systems, net equipment and management software to participate.

Many of the vendors have very different ideas about what CIM is, and they may have trouble getting their implementations to play together, says J.P. Corriveau, a senior vice president at Computer Associates. "The interoperability event will be a great learning experience for the vendors involved," he says.

Managed Objects — a company that makes software to tie together management systems — is waiting for the interoperability tests to wrap up before it releases a CIM object manager.

Some CIM implementations have already been demonstrated. Members of the Storage Networking Industry Association decided to use CIM as the management model for storage devices, and the group conducted a demonstration of the technology in October.

"It was the first Internet-based use of WBEM anywhere," says Mike Dutch, director of enterprise architecture and technology at Hitachi Data Systems, one of the seven companies that participated. In the demonstration, a Web browser was able to pull up CIM information from devices around the country via the Internet. The data collected was very basic, showing little more than inventory, but it proved that CIM could work at an enterprise level, Dutch says.

More to come

The initial work on CIM is done, but the DMTF is still working hard to flesh out definitions for representing specific technologies and equipment. So far, the group has completed specifications for systems and devices, logical and physical network models, applications and distributed application performance.

Expected soon are definitions for policies, support management, telephony, service-level agreements and users. Some of these will be included in Version 2.3 of the CIM Schema, due out this month, Bumpus says.

Despite the fact that the enhancements, interoperability tests and other events are coming up, there hasn't been much publicity about CIM over the last six months or so, points out Colin Mahoney, an analyst at The Yankee Group.

Part of the reason is that vendors seem more interested in CIM than customers do, Mahoney says. While vendors are pushing CIM, many customers have their hands full trying to establish e-businesses and integrate their management tools with the new e-business world. CIM is in danger of becoming simply a checklist item, he says. Without customers pushing for CIM, vendors may not fully exploit CIM's ability to integrate management software.

On the other hand, e-business is increasing the need for CIM, says Richard Ptak, a vice president at Hurwitz Group, a consulting firm in Framingham, Mass. Companies will need an integrated view of what's happening with their servers, applications and networks, and CIM is a way to unify information from all those elements, he says.

The main reason behind the lack of publicity may be that vendors simply have their heads down, building CIM into their products. It remains to be seen whether that hard work will pay off for users. ◪

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Technology Update

An Inside Look at the Technologies and Standards Shaping Your Network

Ask Dr. Intranet

By Steve Blass

I work with a government agency WAN and have run into a typical problem with intranet design involving network address translation (NAT) and standard TCP client/server architecture. Our network operations center runs Cisco NAT functions on its intranet routers. We have a new vendor product that requires standard "three-way handshakes" for its client/server application. The server sits behind a NAT firewall and the client is at a remote location outside the firewall. The desktop client product breaks on a Port Setup request because the server substitutes the NAT address for the client. Is there a type of TCP/IP redesign that can fix this problem?

It sounds like you'll need an application gateway firewall, patches from the software vendor, or a virtual private network (VPN) solution to provide the end-to-end TCP/IP connectivity required. Placing the application server in your network using an Internet address behind a firewall that isn't performing NAT could enable remote Internet clients at the expense of blocking client access from inside your NAT perimeter. The VPN solutions from most firewall vendors would provide the kind of end-to-end tunneling your application seems to need.

Talk to your vendor about its recommendations for using the application across NAT boundaries; the vendor may have other customers who've solved the problem.

Blass is a network architect at Sprint Paranet in Houston. He can be reached at dr.intranet@paranet.com.

Wireless LAN speeds get a boost

BY JOHN DREWRY

With portable computers and wireless LANs, users can enjoy greater productivity while away from their desks, whether they are in conference rooms, public areas or remote offices.

Until recently, however, wireless LANs were too slow for most enterprise applications. Based on the IEEE 802.11 standard, they ran at 1M to 2M bit/sec.

Now a new high-rate extension to the standard, 802.11b, lets wireless networks support data rates up to 11M bit/sec.

Ratified in 1997, the original 802.11 standard united the wireless industry by defining a low-level protocol architecture that worked with conventional upper-layer enterprise protocol stacks. Also, 802.11 maintained compatibility with the three most popular radio transmission types: direct sequence spread spectrum, frequency-hopping spread spectrum, and infrared.

Essentially, this new architecture added intelligence at the medium access control (MAC) Layer 2 and at the physical (PHY) Layer 1, fostering cooperation between the two layers in performing the critical tasks involved with initiating and maintaining wireless communications.

For instance, to ensure reliability of the wireless link, the MAC and PHY work together to determine if a clear path exists before they start a transmission.

During transmission, they employ special collision-avoidance and arrival-acknowledgement techniques that are not required in wired Ethernet LANs.

These are necessary because, unlike wired Ethernet, which uses the CSMA/CD collision-detection protocol to elicit a retry in the event of a packet collision, wireless 802.11 clients use collision avoidance — known as CSMA/CA, or Carrier Sense Multiple Access/Collision Avoidance. The reason: Collisions are more difficult to detect in wireless transmissions.

Finally, for direct sequence spread spectrum (DSSS) systems, the 802.11 specification includes provisions for implementing PHY-layer modulation techniques called Differential Binary Phase Shifting (DBPS) and Differential Quaterature Phase Shift Keying (DQPSK).

DSSS functions by substituting special codes for the normal bits of information, the "ones" and "zeros," that are transmitted across a network. DSSS represents each bit with a unique code, then spreads the code pattern out across the radio-wave spectrum as a protection against interference that might occur at one point in the spectrum. At the receiving end, the pattern is decoded back into its original information bits.

DBPS and DQPSK increase signal efficiency by modulating, or shifting, the radio waves in smaller increments than normal, and thereby allowing more bit values for each transmitted radio wave.

What CCK does is apply sophisticated mathematical formulas to the DSSS codes, permitting the codes to represent a greater volume of information per clock cycle. The transmitter is now able to send multiple bits of information with each DSSS code, enough to make possible the 11M bit/sec of data rather than the 2M bit/sec in the original standard.

The 802.11b standard benefits users by delivering wireless Ethernet speeds of 11M bit/sec that can reliably support everyday business appli-cations, e-mail, Internet and server network access.

With support from the new Wireless Ethernet Compatibility Alliance, founded by 3Com, Lucent, Nokia and several other companies in the wireless LAN business, the new standard will also promise certified interoperability across multivendor platforms.

Finally, the 802.11b standard serves as a rallying point for vendors and users clamoring for a simplified wireless LAN landscape.

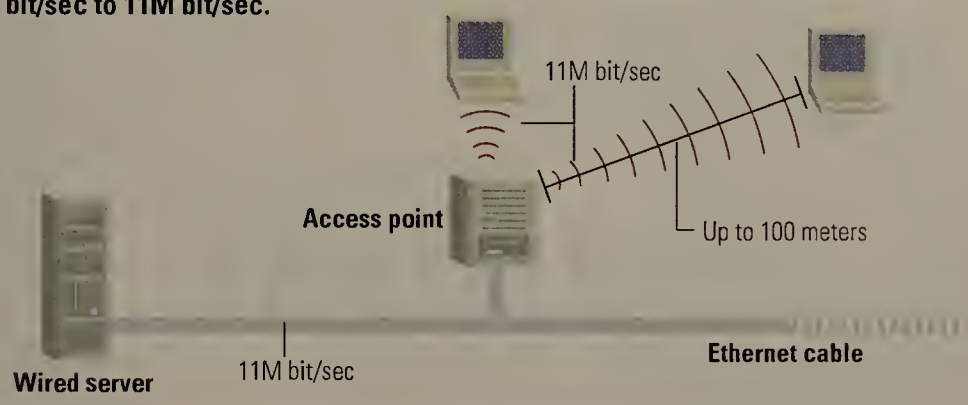
Vendors can now focus on a single, high-speed standard, and users can cut through the clutter of wireless options by focusing on a standard that delivers multivendor interoperability and the performance to meet their application needs.

John Drewry is director of product management for 3Com's Wireless Connectivity Division. He can be reached at John_Drewry@3com.com.

UP CLOSE

A look at a wireless LAN

In a typical wireless LAN configuration, transceiver-equipped devices known as access points are connected to an Ethernet cable, and then serve to receive, buffer and transmit data between wired and wireless networks. In today's typical, open-office environment, the operating range is up to 100 meters. A recent extension to the IEEE's 802.11 standard boosts data transmission rates from 2M bit/sec to 11M bit/sec.



By using DBPS and DQPSK, DSSS systems are able to attain 1M and 2M bit/sec data rates, respectively, in the 2.4-GHz radio band allocated by the Federal Communications Commission to wireless LANs.

In September 1999, the IEEE approved a new designation, known as 802.11b, as the high-rate extension to 802.11. Intended to retain the error-correction, security, power-management and other advantages of the original, the new 802.11b standard adds a key ingredient — a technique for increasing bandwidth to 11M bit/sec.

Called Complementary Code Keying (CCK) the technique works only in conjunction with the DSSS technology specified in the original standard. It does not work with frequency-hopping or infrared transmissions.

Gearhead — inside the network machine . Mark Gibbs

CATCHING UP WITH UNFINISHED DETAILS ... AND SMTP

This week, we start off with a couple of amplifications/corrections. First, with reference to last week's column, the RF bug mentioned can be purchased from Gateway Electronics in Denver, (303) 458-5444, for around $15. According to Mr. Miranda (my source for the bug):"They are in fact Asian ASICs made in Korea and imported by a company here in L.A. that has no telephone number. The range is 100 MHz to around 1000 MHz."

Second, regarding the previous week's missive, a reader, who for some strange reason asked to remain anonymous, wrote to point out that Gearhead stated that SMTP messages are formatted according to RFC 822 (Standard for the Format of ARPA Internet Text Messages), which has largely been superseded by RFC 2045 (Multipurpose Internet Mail Extensions).

He pointed out that MIME "enhances the basic format of Internet e-mail messages [RFC822] to be able to use character sets other than US-ASCII for textual headers and text content, and to carry non-

textual and multipart content." Indeed it does.

He also pointed to an excellent request for comment-to-be. It is a useful Internet Security Glossary that you can find at http://search.ietf.org/internet-drafts/draft-shirey-security-glossary-02.txt. Thanks, Doc.

This week, we'll continue where we left off the week before last with Simple Message Transfer Protocol . . . and where we left off was having said "Hi" to an SMTP server. Although Gearhead explained that TCP packets were used, Gearhead failed to note that the port SMTP uses is 25.

Gearhead also incorrectly cited that the SMTP server replies with a completion code of "200". In fact, the successful response code for the HELO command is "250". A small detail is that the HELO command should be followed by the sender's domain name as in "HELO gibbs.com". Note that most servers don't require the domain to be specified and anyway, you can lie about it if you so please.

So now that the corrections are out of the way, we can proceed. We have the SMTP server now ready to talk to us. First, we need to declare who we are. This is where the MAIL command comes in. We send the command:

MAIL FROM: <Gearhead@gibbs. com>

And unless the server has some reason for rejecting us — such as our address being in the server's list of blocked addresses — we'll get another "250" back to signal that our command was OK.

Note the use of "< >" required to delineate the sender's name, which, like the domain name in HELO, can usually be fake — servers usually don't check to see if domain names of recipients are valid.

Now we have to say who we want to send the message to:

RCPT TO:<fred@fred.com>

The server may reject the command for a number of reasons, including asking the server to relay messages to domains other than its own (a favorite trick of spammers) or because the user doesn't exist on the server. If you are sending to a number of users, you must use a separate RCPT command for each e-mail address.

Of course the user you're after may not be on the server, so you may want to test to see if the user exists. For this you use the VRFY command:

VRFY fred@fred.com

If the user exists, the server should respond with a "250". Note that all of these responses will usually include some descriptive text. In the case of VRFY, the server should follow the "250" with the e-mail address that will be the actual destination of the message. This allows you to see when e-mail addresses are aliases for other users.

Enough already! Next week, we will finally send a message.

RCPT TO: gh@gibbs.com.

Help Desk

A reader wants to know which transport mechanism is best for a multiservice network: IP or frame relay? "Does use of any protocol other than IP make sense in terms of price and performance, especially when dealing with financial networks for banks?" the reader asks. Help Desk Editor Ron Nutter explains how banks are moving from old SNA systems to more of an IP environment. "While the use of other protocols on your network is possible, the less you have to use means less configuration and troubleshooting problems," he says. Find out what else he recommends in this week's column.

DocFinder: 6830

What you don't know . . .

Recently, a group of virtual private network (VPN) vendors got together to test the interoperability of their products. However, you probably didn't hear about the results of this testing in the press or from your colleagues. Why? Because in the world of interoperability testing, the less of a public fuss, the better, according to VPN Consortium Director Paul Hoffman. He says tests done in the public eye are not as useful as those done behind closed doors. When the spotlight isn't on, vendors will bring to the table their most recent and untested products without the fear of scrutiny.

DocFinder: 6831

A network monster?

A reader writes: "One rogue user installed Windows 2000 Server with Active Desktop on his user machine. Lo and behold, Active Directory attempts to modify our Linux-based BIND domain name system (DNS) services. We have yet to confirm this, but it is believed that Active Directory's repeated attempts to modify the primary domain eventually created a buffer overflow which caused the machine to lock up." He hasn't been able to replicate the results, "but the last syslog entry before the crash was an attempt from Active Directory to modify the domain." He says his NT team told him Active Directory requires Microsoft DNS servers. "Isn't that like purchasing a new Mustang to find out that it will only run on Pirelli tires and Quaker State oil? What do you think?

DocFinder: 6832

Desktop management

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Win 2000 rollout

Microsoft is planning a big party to launch its new operating system, and we'll be there. Check NetFlash every day next week for updates from San Francisco. We'll have product news, event happenings and more.

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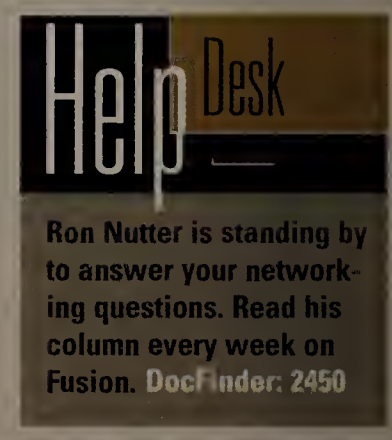

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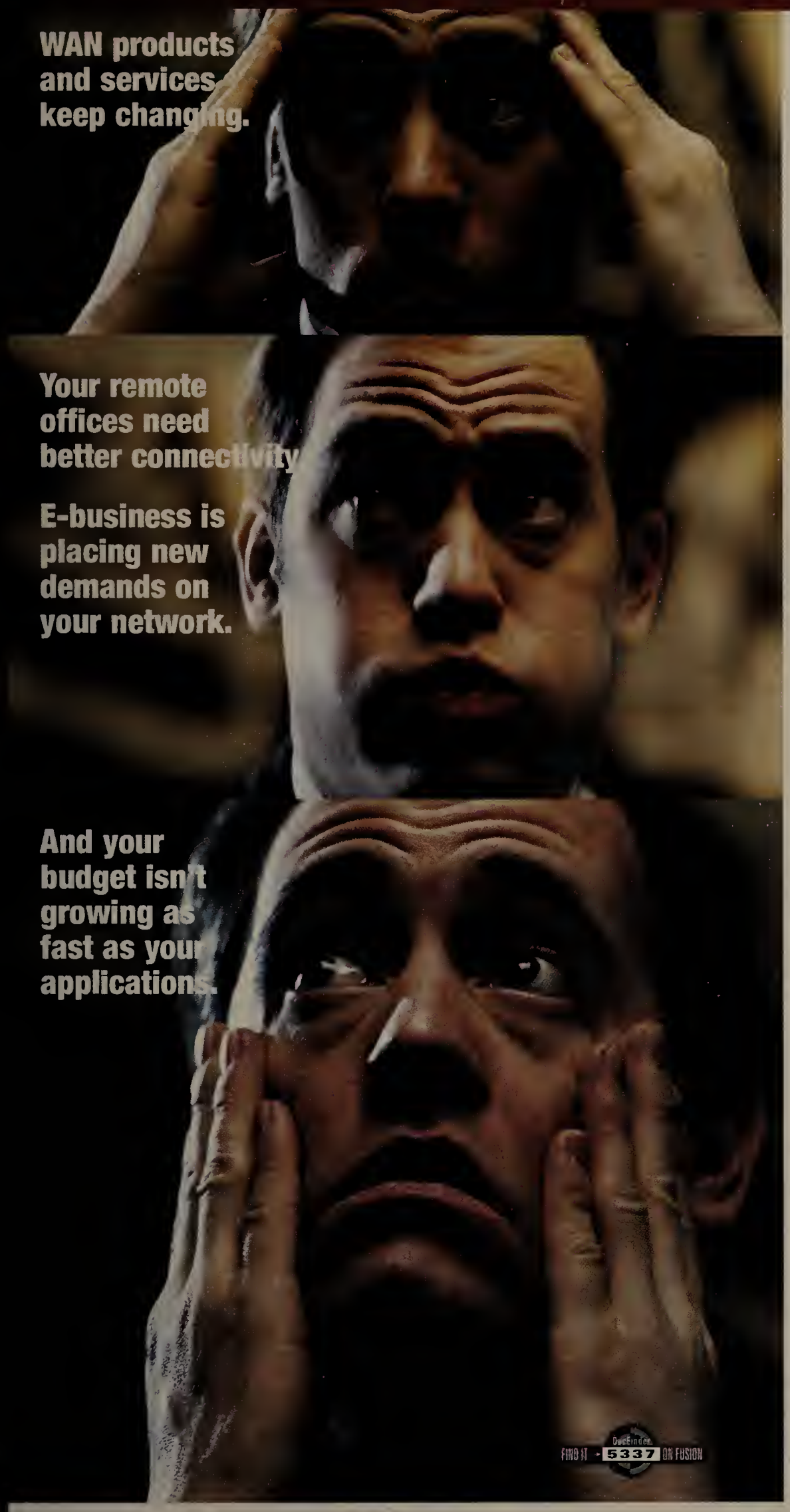

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Opinions

Editorial

Ford and Delta see the light

While I was extolling the virtues of using free services as a way to push the corporate work force into the Internet realm (*NW*, Jan. 24, page 62), Ford Motor Corp. and Delta Airlines were putting the finishing touches on more ambitious plans.

The companies independently announced they will subsidize not only the cost of Internet access for employees who want to get online, but also the cost of the PC.

Ford's 350,000 employees will be able to get a Hewlett-Packard 500-MHz Celeron machine and unrestricted UUNET Internet access for $5 per month. Delta's employees will pay $12 per month for a similar deal.

Both outfits launched their programs with PeoplePC, a firm that buys bandwidth and PCs in bulk and passes on the savings to customers in the form of attractively priced bundles. The average consumer can get a 366-MHz multimedia Toshiba box, unlimited UUNET access, 10M bytes of server space, e-mail and on-site technical support for $25 per month for three years.

Ford and Delta are betting the cost of the programs will be offset by advances that will become evident to their plugged-in work forces. I agree. These companies are to be commended.

Unfortunately, neither company is talking about how much the programs cost, which makes it harder for you to figure out if it is possible or worth following suit. If, for example, you presume that Ford is paying PeoplePC's full $25 per employee per month fee, that means the company could have to pay up to $84 million per year if all 350,000 employees sign up.

But obviously Ford isn't paying retail. Ryan Gilbert guesses the companies are paying $10 to $15 per employee per month for the works, if not the $12 Delta is offering its employees.

Gilbert has some experience in these deals as co-founder and vice president of business development for Brand3, a company hawking what it calls "a unique desktop marketing and relationship-building business powered by free Internet services." (Example: Buy a BMW, get free BMW Internet service and every time you're online there is a BMW box floating on screen).

So Ford may be paying $5 to $10 per employee after the co-payment, and Delta may only be paying a few bucks each, if anything at all.

Now is the time to push similar programs in your company. Besides potentially benefiting the firm, look at the exposure you can get. Both the Ford and Delta deals were announced by their respective chairmen.

— John Dix
Editor in Chief
jdix@nww.com

Message Queue

Lose the winners

Regarding Mark Gibbs' "Backspin" column "Winning and losing" (Jan. 31, page 81):

I agree with Gibbs' plea that product reviews not pick a winner, but instead just compare products. I have always wanted the facts so I could pick the best product for my situation.

Also, let's keep the comparisons to shipping products. Let's compare things that are on the shelf, not in beta.

Jeff Christopher
Network administrator
Jergens
Cleveland, Ohio

Believe it or NOS

Regarding your network operating system review ("King of the NOS hill," Jan. 24, page 71):

I was upset by this article, for two main reasons: Windows 2000 is not shipping, and the category of scalability, which skewed the results, wasn't explained. The article seems to have been written by Microsoft, and when the numbers did not back up the desired conclusion, some unexplained factors were thrown in to make Windows 2000 the "winner."

But if your numbers are correct, why would anyone want to implement Win 2000 for either Web page serving or regular file and print serving? Based on the numbers alone, I would put up Novell and Linux servers because performance is more important to my users than some hypothetical scalability concern.

David Mathis
Alexandria, Va.

I read with interest your NOS review. However, I feel you've done a disservice to would-be Linux administrators by describing some of the administration tools as " . . . cryptic configuration ASCII file — a serious drawback."

Every possible parameter that governs the operation and performance of the Samba file-sharing package is enumerated and documented. A single configuration file, easily administered via telnet or even a 14.4K bit/sec modem dial up, configures the entire server. Restarting the process or the computer itself is not necessary. Contrast this to binary databases filled with undocumented settings and frequent server restarts.

Unix and Linux excel in ease of remote administration. Just because one is not familiar with the Samba configuration file does not make it cryptic. Give Linux and Samba a fair chance.

Edward Scherman
Network architect
Rational Computing
Providence, R.I.

Can't hack it

Regarding your feature "Diary of a hack attack" (Jan. 10, page 42):

From the title of this article, I thought I might get some insight and valuable knowledge in a "know your enemy" kind of way. I was mistaken.

The article had no real information of use to most network professionals. Two minutes of browsing any security Web site would describe the same attack methods detailed in the article and provide countermeasures to nullify those attacks — information which your article did not provide and which would have been far more beneficial to readers than learning that "Bob the hacker" hasn't performed basic grooming functions since his military discharge.

Your article also contains some basic errors. Author Deborah Radcliff mentions an "extreme hacking" course she attended at Ernst and Young in which, after obtaining "password hashes" and using L0phtcrack to decrypt them, the class was able to "log on as a super user and gain root access." She goes on to describe how the class "installed Trojan horses such as Back Orifice" on a Unix system.

There is no super user or root access on the NT system she described, and Back Orifice runs on NT, Windows 95 or Windows 98; not Unix, as the article implies.

Jeff Cochran
Naples, Fla.

Radcliff responds: You can't get "root" on an NT box, but you can get "admin" privileges, which is the NT equivalent. Technical sources interchange the terms.

Send letters to nwnews@nww.com or John Dix, editor in chief, Network World, *118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.*

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Venture Over the Horizon . Kevin Fong

An investor's perspective on the year ahead

Building and improving today's Internet infrastructure will be the dominant investment theme this year. The companies of interest to venture capitalists will be those that address issues such as bottlenecks in the wide-area infrastructure, getting better performance from the Internet, and improving network availability and reliability.

Optical networking will continue to grab the attention of Wall Street and venture investors. The wild success of Sycamore Networks in the public market, as well as the $3.25 billion that Nortel Networks paid for Qtera and the $15 billion that JDS Uniphase paid for E-Tek Dynamics, are sending strong signals that optical technology could be crueial for Internet growth. With its promise of a millionfold increase in telephone network capacity, optical technology would be able to handle the dramatic increases in Internet traffic.

Optical technology also will help relieve congestion in metropolitan-area networks, where corporate networks and the Internet meet. The growing use of virtual private networks, along with the push by application service providers (ASP) to host enterprise applications off site, means that many of the services corporate users want now reside outside the LAN. Therefore, expect to see lots of innovation in the optical area.

The need for high-bandwidth services to second-tier cities where companies have satellite offices is being addressed by several technologies, including SONET, Gigabit Ethernet, digital subscriber line and wireless technologies. All will be fully exploited by the telephone companies in order to get the required scale as the number of users increases.

Communications services will also continue to be a major area for venture investing. Enterprise network managers are faced with more complex decisions about network platforms, service types and features, and an ever-increasing number of vendors all with their own service levels, billing cycles and network reliability. Communications management and integration products are emerging to deal with these issues.

Netsourcing, the outsourcing of a business's information technology and networking for electronic business applications, is another communications service that will continue to grow. By outsourcing these applications, companies can reduce their technology investments and get to market faster.

How enterprise applications are delivered will also develop more fully this year. Storage subsystems, server software and network equipment will not only be deployed within corporations but also by ASPs. This "rent-an-app" approach will continue to create opportunities for venture-backed companies.

This year will see a lot of approaches being tried to strengthen the infrastructure of the Internet. Pay close attention, because these approaches will eventually affect corporate networks as well.

Fong is a general partner of Mayfield Fund, a venture capital firm in Menlo Park, Calif. He can be reached at kfong@mayfield.com.

On Security . Winn Schwartau

Wipe out Web graffiti by going back to basics

It totally baffles me that more people haven't returned to the basics to solve a fairly elementary information security problem: Web graffiti and illicit data modification.

The basics of information security consist of a simple triad:

- Confidentiality: making sure prying eyes cannot read information in storage or transmission.
- Availability: keeping systems up and running at all times, especially mission-critieal applications.
- Integrity: insuring that data is not accidentally or intentionally modified or corrupted.

Confidentiality is generally achieved through encryption of data transmissions, such as e-mail, as well as encrypting files in storage. Denial-of-service attacks — a major threat to availability — are being prevented through better intrusion detection, high-speed reaction mechanisms, redundancy, fault tolerance, disaster planning and system reconstitution.

But what about Web graffiti, which is not only the most prevalent form of hacking we see today, but also a major threat to data integrity?

Integrity attacks modify content without the knowledge or permission of the owner. Typically the hacker replaces the words or pictures on the home page with a political, pornographic or juvenile message of some sort. The common hacker message "U R Owned" seemingly refers to the complete takeover of your network, when in fact it more often refers to poor Web server configuration or unpatched vulnerabilities.

For the life of me I can't understand why Web hacks have continued when, since the late 1970s, we have had many integrity protection methods to protect the contents of files from illicit modification.

The simplest method is called cyclic redundancy check (CRC). The contents of the file are X-or'd with another set of (random) data and the results create an integrity key. If, when the reverse CRC process is run, the integrity key doesn't match the original, the file has been corrupted.

A stronger integrity method is called message authentication code (MAC), a cryptographic technique that is based on the Data Encryption Standard. Again, a key is generated when the file is eneoded. Upon decoding, the key must match if the file is to be trusted. MAC was designed for use in eleetronic financial transactions to make sure that a $1,000 wire transfer doesn't become $1,000,000.

Fast forward to the Web. When we go to eBay, we want our bids and product descriptions to be accurate. Airlines and service industries want the correct hotel rooms or flights, billed at the right price to the right customer. News outlets want to make sure that an item is not subtly changed to alter its meaning.

Why hasn't the industry picked up on the importance of data integrity not only in Internet applications but for intranet usage as well? Part of the reason is that vendors have yet to create decent tools and make them readily available to customers.

However, in 1992, Gene Spafford and Gene Kim of Purdue University reopened the integrity issue by developing Tripwire, the first comprehensive file integrity checker (www.tripwiresecurity.com). Systems such as Tripwire can be configured to check for integrity violations — unauthorized file modifications — on a periodic basis (for example, hourly or daily) and will check only those files chosen by the administrator.

FRANCIS BLAKE

Integrity checkers address many security needs. They can deteet accidental system and file corruption early, preventing additional damage as errors compound themselves. They can protect against viruses by looking at file and system behavior rather than static signatures. By their very nature, viruses cause integrity violations. They become unwanted and unchecked files on a system and/or modify files — especially system files — without permission. Products such as Integrity Master from Stiller Research (www.stiller. com) offer a dynamic means of virus protection unlike the classic signature-based mechanisms.

Web sites are the most visible and vulnerable targets of integrity attacks — most of which are easily preventable. Integrity checkers are well worth the investment.

Schwartau is the president of Interpact, Inc., founder of InfoWar.com and author of Cybershock, *to be published in March. He can be reached at winns@gte.net.*

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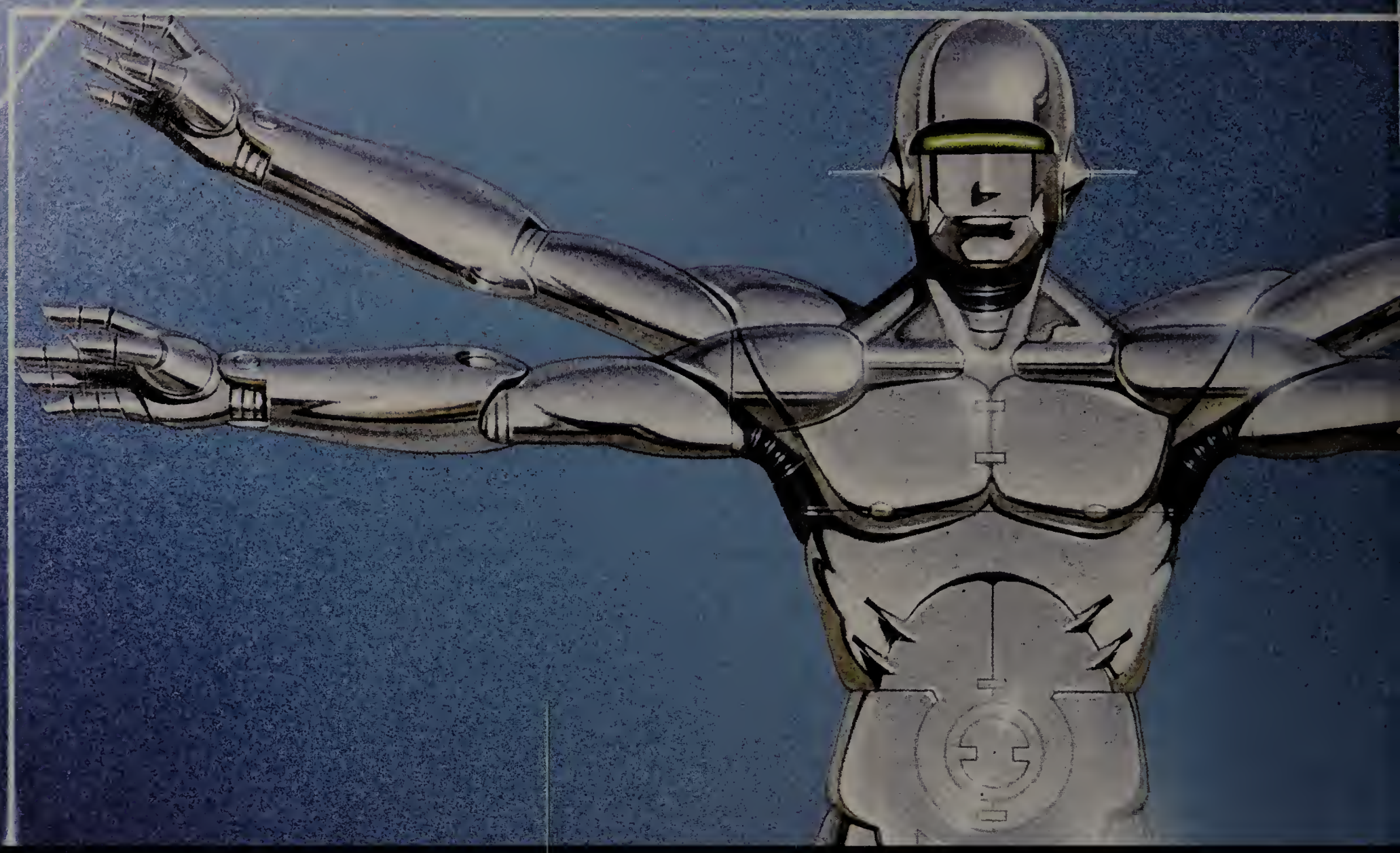

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Feature

FORGET Y2K; IT'S ON TO W2K

Intensive network planning is key to successful Windows 2000 migration.

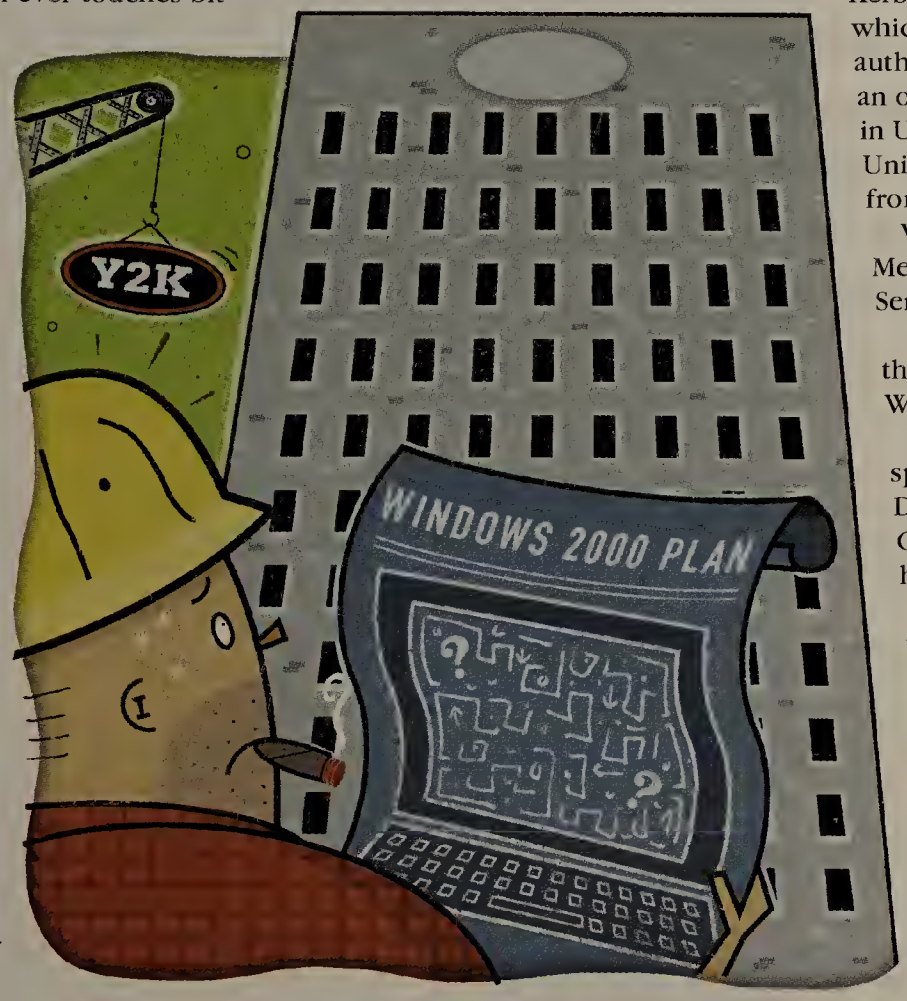
BY SHARON GAUDIN

When it comes to migrating to Windows 2000, network executives will need to devote several months to a whole range of key planning issues before the new operating system ever touches bit to metal.

Analysts and corporate users agree that the nuts and bolts of migrating to Microsoft's extension of the Windows NT operating system family will be nothing compared to the sheer amount of head scratching that will be needed beforehand.

Figuring out how to whittle 35 domains down to three, doling out more narrow, specific privileges to administrators who previously had a free rein, ensuring that existing applications will be compatible with the new operating system and deciding whether to upgrade in stages or in one fell swoop — that will be the hard part.

Microsoft and its partners, such as IBM, are well aware that IT managers will have to take off their technology hats and dive headfirst into management issues and power struggles long before they set up the first desktop. That's why the two industry powerhouses have invested tens of millions of dollars in building new training sites around the globe and deploying a small army of trainers.



"This can become an administrative nightmare if you're not ready for it," says Todd Richter, PC specialist at Baystate Health System in Springfield, Mass. "This will take more forethought than usual. For many NT administrators, it may look like a totally alien system unless you've been studying it."

Now that Win 2000, after four years on the drawing boards and test beds, is slated to ship to customers this month, Microsoft is throwing its shoulder into preparing customers for the big migration. Sergio Pineda, a lead Windows product manager at Microsoft, says the company is focused on two legs of training — one track for the nuts and bolts of deployment and an advanced track for planning and preparation.

"People need to decide how they want their network to work over the next five years," Pineda says. "If Windows 2000 is going to be key, you absolutely have to have planning skills."

Industry watchers say Win 2000 is so different from NT 4.0 that it might as well be a whole new animal. For instance, Win 2000 has 35 million to 45 million lines of code, compared to about 15 million lines in NT 4.0. Win 2000 also is quite different architecturally, offering NT's first across-the-board directory, Active Directory, and its new security feature, Kerberos. Microsoft's Kerberos security, which offers benefits such as stronger user authentication and mutual authentication, is an off-shoot of the Kerberos security found in Unix. It's not, however, compatible with Unix security and is completely different from NT 4.0's security, as well.

Win 2000 also incorporates Microsoft Message Queue and Microsoft Transaction Server, which had been separate tools.

Analysts generally agree that this will be the largest and most difficult migration Windows users have undertaken.

"You can't take the matchbook correspondence course on this one," says Laura DiDio, an analyst for Giga Information Group in Cambridge, Mass. "This is a huge undertaking — a huge problem."

A Microsoft spokesman downplayed the migration challenge, saying this move simply will take more upfront planning than before.

The biggest issue network executives need to mull over is how to deal with Active Directory, which calls for companies to collapse possibly dozens of domains down into three or four. The challenge is moving from NT 4.0's flat-file system to the hierarchical file system in Active Directory, which will hold information on users, devices, applications and services. That will allow the new directory system to describe which users have access to which servers, as well as what applications the server can provide to that user.

Implementing Active Directory won't be easy because the network administrator needs to ensure that data is defined the same way and the same symbols are used to represent specific features in both systems. Because a hierarchical structure supports inheritance, the administrator

JACK GALLAGHER

also needs to be aware of the fact that a change made to a domain high in the structure will trickle down to lower domains, like the characteristics of a parent being passed down to children.

All these structural changes mean a network administrator will have much more granular control over the rights and privileges users and other administrators have in the system. With NT 4.0, for instance, if a network administrator wanted to give the head of marketing the ability to change subordinates' passwords, it meant the marketing manager would have free rein throughout the system. The network administrator could not just give the marketing manager a specific, limited right.

That's not the case in Win 2000.

"The capabilities of an administrator have completely changed," says an IS operations and information security manager in Dallas. "It's a lot better, but it takes a lot more effort. That means I have to rethink who is in what department and who should be able to do what ... and who I'm going to take what rights away from and who I'll give those rights to. It can get pretty sticky."

"It's good to have somebody help you understand how different Windows 2000 is. . . . You can't cold cut over and be a happy person."

Al Williams, director of Distribited Systems Services, Penn State University

Users agree that network administrators will have to sit down with the CEO or others on the business side and wade through the company's management structure in order to dole out administrative rights on the system, as well as create a specific map of the servers and services each and every employee will have access to.

And companies may have to upgrade, rebuild or at least tweak most, if not all, of their Windows-based applications to make them compliant with Win 2000. Some industry watchers say as much as 80% of the code in Win 2000 is brand new, which means existing applications will still run on the new operating system, but net administrators probably won't be able to take advantage of the new features that enticed them into buying the software in the first place.

In addition, the sought-after Win 2000 features won't be available until the new operating system is sitting on every desktop and server across the entire enterprise. That means companies that pay heed to Microsoft's suggestion of a long, piece-by-piece migration won't see the benefits of those new features until the migration is complete. Some analysts say that could be as long as 18 months for the average large company.

Microsoft, though, still is recommending that users take the long, slow road to migration. A Microsoft spokesman advises customers to start with upgrading the desktops, saying users will see "incremental benefits," such as local encryption and power management. If something goes wrong with the migration at this point, the network will not be affected.

After that, customers should do a few servers at a time, wrapping up by changing over the domain controller, which is where user names and passwords are kept. Because that move affects everyone on the system, users need to be comfortable with the new system by the time administrators hit this final stage.

Don't be afraid to ask for help

Al Williams, director of Distributed Systems Services at the Center for Academic Computing at Pennsylvania State University in University Park, has been working with beta versions of Win 2000 for nearly a year, testing the software and planning a transition. And he says it's a big enough move that he brought in reinforcements — IBM.

"You can't cold cut over and be a happy person," says Williams, who services about 44,000 users on 50 NT servers. "IBM came to us and said they wanted to prove that Win 2000 was ready to use on their equipment. They said they would supply hardware and a support structure ... where they field problems and act as an advocate with Microsoft. We didn't have to pull our own equipment out to test on."

IBM has loaned Penn State half a dozen desktops and the same number of laptops, along with two Netfinity servers. IBM also gave the university's technical staff two days at IBM's Windows training center in Kirkland, Wash., right next door to Microsoft's Redmond headquarters. Then IBM sent a trainer to work on site at Penn State for a week.

"It's good to have somebody help you understand how different Windows 2000 is," Williams says. "What do you want to do to take advantage of Kerberos? What does [Lightweight Directory Access Protocol] do for me? How do I rearrange my domain structure so it works well for my company? How do I work with my domain name services? A lot of the training comes in the planning stage. And under the covers is the management structure," he says.

Pittsburgh-based Mellon Financial Corp. is using the upcoming Win 2000 migration as the jumping off point for a complete overhaul of its infrastructure.

"We're building a new infrastructure to support the move," says Joe Cirra, assistant vice president of Mellon Financial. "We're going to let a lot of the legacy domains fall away. We have roughly 40, and we want to end up with three when all is said and done. It'll be a technological refresh." Cirra adds that the planning and preparing will be a year-long process, with broad-range pilots scheduled for the fourth quarter of 2000 and main deployment in 2001.

Cirra also has been bringing in plenty of help. He's been working with IBM trainers and tech support people on the planning and building of the Active Directory infrastructure. He's also been working with local Microsoft support staff, along with joining Microsoft's Premier Support program.

And all that training is exactly what Microsoft needs to do, according to Dan Kusnetzky, analyst with International Data Corp., a market research firm in Framingham, Mass.

"Microsoft sees this as absolutely crucial for the success of their product," Kusnetzky says. "A lot of NT's problems can be attributed to a system that was configured badly, but that doesn't stop people from blaming Microsoft. They don't want any more jokes about the blue screen of death ... It's not going to be an invisible upgrade, and Microsoft knows that." ◩

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MAKING IT REAL

The Hartford uses XML to create real-time, Internet-based data exchange application.

BY JASON MESERVE

The insurance industry has been slow to take advantage of the Internet. Proprietary data-collection systems are still the norm. And although independent agents and underwriting companies can keep track of their customers electronically, there's no easy way to exchange information.

But The Hartford Financial Services Group, with more than $150 billion in assets, is hoping to change all that with a project that uses XML and the Internet to make it quicker and easier for its small-business insurance agents across the country to do business.

Specifically, the new system will enable independent agents to obtain rate quotes in real time directly from The Hartford's mainframes, replacing the batch-processing system that today takes up to 24 hours to generate a quote and transmit the information back to an agent in the field, says Hugh Anderson, enterprise architect for the Hartford, Conn., insurance underwriter.

Essentially, Anderson is taking the current industry standard for electronic data interchange, called single-entry, multicompany interface (SEMCI), and automating and Webifying it. "SEMCI is really a concept or direction that the agencies have been crying for," Anderson says.

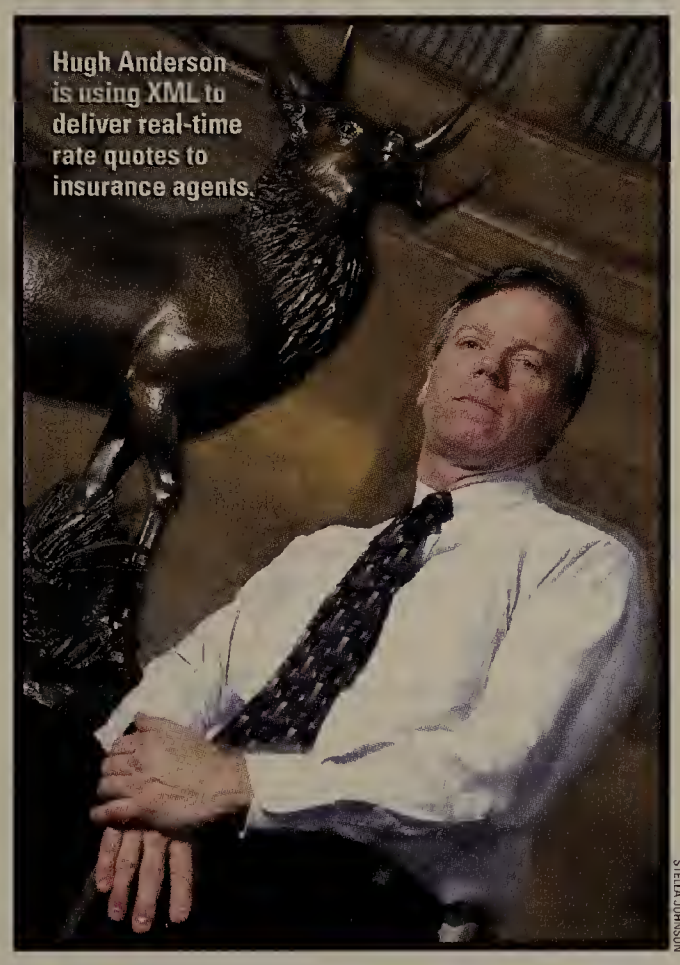
SEMCI is based on the AL3 EDI standard developed by ACORD, an industry consortium of more than 1,000 insurance carriers and 25,000 agencies, as well as software providers and nonprofit associations, such as agency system user groups.

Under the current implementation of SEMCI, agents enter customer and policy information into their own systems, and then must re-enter most of the data into another electronic form that is used by The Hartford in order to generate a quote.

Data from the form is stored in an electronic mailbox, where it is picked up periodically by The Hartford's IBM A1 mainframes. The transaction is processed by The Hartford, then the rate quote is sent back to the agent using the same mailbox system. The process can take as long as 24 hours.

"We implemented SEMCI on our commercial lines a couple of years ago, and while it maximizes productivity and efficiency, it's still an offline approach," Anderson says.

Now Anderson and company are attempting to create a real-time version of SEMCI that will eliminate the redundant data entry and provide instantaneous response to agents, using XML as a means to communicate directly between an agent's system and The Hartford's mainframe.


Hugh Anderson is using XML to deliver real-time rate quotes to insurance agents.

STELLA JOHNSON

Because the current AL3 standard is designed for an SNA network, The Hartford is encapsulating the SNA traffic in XML for transmission over the Internet.

This will allow data to flow directly out of an agent's system to The Hartford's and back again in real time. The agent does not have to launch a Web browser or other Internet software — everything is handled automatically on the back end.

With The Hartford's real-time implementation of SEMCI, agents will enter all the customer data once into their own systems. An XML datastream will be generated and sent over the Internet using a standard Web server. The Hartford's Web server will authenticate the user, receive the information, parse the XML back into standard AL3 and hand it off to the mainframe for processing using IBM's MQ Series middleware.

"We break the XML down to AL3 so we can leverage the work done to date in our mainframe interface," Anderson says.

Once the mainframe has generated a quote, the information is sent back to the agent using the same method. The agent then has an exact price quote instead of an estimate based on published premiums. The entire operation takes two to 10 seconds, depending on the transaction.

"Immediate, real-time response is a breakthrough for the insurance industry," Anderson says.

Because ACORD only recently began working on the development of the XML standard for the insurance industry, there is no ubiquitous data type definition (DTD) in place for describing data involved in an insurance transaction. The DTD provides definitions for every data field in a transaction so that each company handles data the same way. For now, The Hartford uses its own definitions and will implement any new ACORD standards as they become available.

The Hartford is working with Applied Systems and other third-party vendors to help develop a back-end Web interface for the agency systems, which are operated independently of The Hartford. Applied Systems is a major vendor of insurance agency systems. For the pilot, only Applied Systems' Agency Management System will work with real-time SEMCI.

"The agent's system needs to be Internet-enabled, and we're working with the vendors to get that done," Anderson says. "The agent needs to get a certain piece of software to take the transaction and get it over the Internet."

The independent agents must pay for their own upgrades in order to get real-time SEMCI capability. While Anderson did not know how much the entire project cost or how much it would save, he says it's more than dollars and cents. "We do anticipate it will save time and money, but more important, it is the way in which business will be conducted in the future," he says.

The transition to the Internet has been relatively fast. Anderson and his team realized pretty quickly that they needed to use the Internet and XML to make the data transmission simpler. The major hurdle was getting the transaction encoded and decoded.

Currently, a limited number of agents are helping to pilot the system. The Hartford hopes to roll out its real-time SEMCI to all its small-business insurance carriers early this year. "A lot of things have to fall into place for wide-scale implementation," Anderson says. "We're dependent on the agencies doing it on their end."

The Hartford hopes to expand the system to some of its other lines of business, such as personal and automobile insurance. Anderson foresees the day when agents can enter data into their computers once and receive a number of quotes from various carriers instantly. This won't happen until ACORD comes up with an XML standard that everyone agrees to use, which is still a ways down the road. ◪

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FUTURE OF HIGH-SPEED NETWORKS

The very high-speed Backbone Network Service and Abilene networks boast ample bandwidth, but few are using them yet.

BY SUSAN BREIDENBACH

Can government and academia really create a next-generation Internet with their two high-speed test bed networks, vBNS and Abilene? The jury is still out as National Science Foundation (NSF) funding for the projects dries up at the end of March. Both networks are still highly underutilized, neither has spawned many advanced applications, and any technology transfer to the commercial sector has gone largely unnoticed.

In 1995, the NSF commissioned MCI WorldCom to build the very high-performance Backbone Network service (vBNS). The purpose of the network was to give leading U.S. research institutions high-speed connections to each other and to the NSF's national supercomputing facilities at the University of Illinois in Urbana-Champaign and the University of San Diego.

The NSF wanted to repeat the success of ARPANET and NSFNet, which ultimately morphed into the Internet, create a much faster and more intelligent network, develop new classes of applications that can exploit such an infrastructure, and then watch entrepreneurs take the technology and run with it.

The vBNS backbone started out as an ATM cloud, but today it consists of two parallel networks — one using Cisco routers to run IPv6 over ATM at 622M bit/sec and the other using Juniper M40 routers to run IPv4 over SONET at OC-12 and OC-48. According to MCI WorldCom, the backbone encompasses some 20,000 route miles and serves more than 100 customers.

A second high-speed backbone began vying with vBNS for attention from the research community when the University Corporation for Advanced Internet Development's Internet2 group launched Abilene in early 1999.

"The idea wasn't to replace vBNS, but rather to provide a complementary network that lets Internet2 members test advanced applications and capabilities in an environment that more closely resembles the commercial Internet," says Internet2 spokesman Greg Wood. Internet2 got Qwest to light up some of its dark fiber and Cisco and Nortel Networks to donate routers and SONET gear.

Abilene is a packet-over-SONET network running IPv4 at OC-48 and spanning some 13,000 route miles. Regional giga-points of presence (POP) connect multiple Internet2 institutions. Of Internet2's 170 university members, 86 are now on Abilene; 138 of them are connected to either Abilene, vBNS or both.

The existence of two separate networks has caused some friction, but it also provides a more real-world testing environment. The networks can't be fully peered because only Internet2 members are allowed to use Abilene. However, an agreement between vBNS and Abilene lets institutions that connect to both networks communicate across the combined infrastructure and lets Abilene members access resources that are only found on vBNS.

A number of universities seem to feel more comfortable with Abilene. While MCI WorldCom owns and operates vBNS, the universities themselves run Abilene. Each organization owns its own routers, and the University of Indiana handles day-to-day network operations.

Moreover, vBNS and Abilene members will soon need to find another way to pay for their high-speed connections. Both networks will continue to operate, but the NSF grant programs that subsidize the backbones expire March 31.

Membership benefits

Abilene and vBNS participants have certainly noticed a performance boost. For example, the National Institutes of Health's (NIH) National Library of Medicine has the largest collection of biomedical information on the planet. The library's mission is to disseminate this data, which includes all the genetic sequences of the human genome project, and the vBNS infrastructure is now providing high-speed access.

Researchers at the University of Alabama in Birmingham were used to annoying delays when they accessed biological sequences and genomic databases at the NIH library, but the UAB's Abilene connection changed all that. Now information goes across the vBNS-Abilene internetwork at warp speed and screens come up almost immediately.

The high-speed connection also makes it easier for the UAB to maintain and update local copies of

vBNS and Abilene dividends

Already demonstrated:

- Multicast applications.
- Real-time telemedicine applications, including surgery.
- Distribution of high-definition TV signals.
- Virtual laboratories.
- Pattern recognition across databases.

Under development:

- Middleware for advanced database-to-database interaction.
- Tele-immersion applications.
- Dynamically self-configuring applications.
- LearningWare for building distributed education environments.

Big backbones

While vBNS treats each customer as a separate network access point, Abilene uses regional gigaPOPs to connect multiple organizations.

COMMERCIAL CHOICE

MCI WorldCom shook up the research community last June when it announced a commercial vBNS+ service that wasn't restricted to research institutions. After all, part of the appeal of the backbone initiatives was that they recreated the rarified environment that research institutions enjoyed before the Internet was invaded by the masses. However, MCI WorldCom officials say there is no chance that vBNS+ will do the same thing again.

"In the original Internet, pricing models encouraged aggregation," says Charles Lee, program manager for very high-performance Backbone Network service (vBNS) activities at MCI WorldCom in Washington. "People would buy a port and resell the use of that port many times. The vBNS+ pricing model is based on logical connections rather than ports. If 10 different organizations are sharing a port, they have to pay for 10 full subscriptions at their chosen levels of service.

However, while the same bandwidth can't be sold over and over, different access methods can be overlayed on a single physical port. For example, an OC-3 port can support multiple DS-3 and T-1 subscriptions. Pricing for vBNS connections ranges from $800 for T-1 to $7,600 for DS-3.

There hasn't been an onslaught of commercial users since vBNS+ was launched last spring. While MCI WorldCom won't provide the total number of customers, the only two that have been publicly announced to date are EDS and the National Institutes of Health's National Library of Medicine, which was already a vBNS user.

"The NFS put a lot of restrictions on vBNS — you can't use it to connect to another network, for example," says Mike Gill, electronics engineer at the library. "We aren't a research university, and we needed a broader acceptable-use policy."

– Susan Breidenbach

some of the remote data. Gene-sequence analyses that used to arrive on nine CD-ROMs every other month can now be downloaded over the network in half an hour, and the local databases can be updated much more frequently.

However, participants acknowledge that the vBNS and Abilene networks are underutilized, and say that the next-generation applications are still largely missing. "We would like to be able to point to more advanced applications than we can today," admits William Decker, program director for advanced network infrastructure at the NSF in Arlington, Va.

Impatience for these developments is what motivated Qwest to get involved with Abilene. "We have this tremendous underlying asset, and we want demand for it to get created as quickly as possible," says Guy Cook, vice president of Internet services for Qwest in Denver. "The more broadband applications that appear in the marketplace, the better off Qwest will be. Participating in Abilene gives us a first-hand window into these applications as they are spun off."

Telemedicine is one example. During a surgery performed at Ohio State University, Abilene was used to conference with doctors from other parts of the country. Similarly, an MRI machine can scan a patient in one location and send the data to a remote supercomputer for processing, and then deliver the resulting images to a doctor in a third location.

Other applications that have been demonstrated on vBNS and Abilene include HDTV transmission; remote control of telescopes and electron microscopes; and aligning massive distributed databases to look for patterns across them.

High-speed backbones such as Abilene and vBNS "provide a much more supportive environment for the development and deployment of such applications," says Robert Crawhall, director of research network initiatives at Nortel in Ottawa. "Commercial networks have other priorities, such as solving very complicated network management problems due to heavy traffic loads."

Coming attractions

Internet2 members are working to develop middleware that will tie different databases together and let them communicate. "Right now, the Internet is person-to-machine or person-to-person, and we need database-to-database interaction," Cook says. "Until we solve this problem, much of the promise of e-commerce won't get realized."

Tele-immersion applications are another Internet2 target. Tele-immersion creates coordinated, partially simulated environments at geographically distributed sites so that users can collaborate as if they were in the same physical room. The computers track the participants and the physical and virtual objects at all locations, and project them onto stereo-immersive surfaces.

For example, a virtual workspace might include tele-cubicles that let people interact with each other and objects as if they were all in the same room. Similarly, a public library might offer a 3-D tele-space in which a library user could experience some historic event and even interact with it.

Participants say multicast technology is getting a big boost from vBNS and Abilene. "A lot of commercial networks are multicast-enabled now, but you don't see much utilization of these capabilities," Cook says. "On Abilene, you do." As a result, the multicast technology that reaches the commercial market is cleaner, richer and offers a higher level of performance.

And multicast isn't just for pay-per-view TV and other entertainment applications. It also has great potential as a tool for software distribution and network administration. Companies are using multicast to upgrade PCs around a network or to deliver software updates to partners in a supply chain.

If an SAP application has to update a file on thousands of computers throughout an enterprise and uses unicast to do so, it would completely choke the network. But if the same update is sent via multicast, users won't even notice it.

Cisco and Nortel say advances in routers, SONET equipment and quality-of-service technology are getting pushed to the commercial market faster because of the test beds.

"The test-bed environment lets us deploy leading-edge technology without worrying about the revenue loss that bugs might cause in a production network," says Michael Turzanski, deputy director of Cisco's Advanced Internet Initiative. "We can take more risks and find more bugs before the commercial release."

For example, Abilene's gigaPOPs — fan-in nodes that tie a lot of high-speed campus connections into a high-speed backbone — have been breaking new ground, says Nortel's Crawhall. "We're starting to see this commercially in specialized high-performance services. And the peering relationships Abilene has with the research networks of a number of other countries is teaching us about peering and service-level agreements among high-speed networks."

Test-bed members are also finding that networks start operating differently at such high speeds. Managing a net that is optimized for a few high-performance flows is very different from building and managing networks that are optimized for millions of low-speed flows. And the higher speeds expose a number of new problems — particularly last-mile connections and desktop systems that can't yet match them.

"We have a high-quality physical infrastructure now," Decker says. "What we need is a better logical network infrastructure — one in which applications can ask the network to locate computing or storage resources and then configure themselves around those resources and present services to users."

ROI or ripoff?

But critics say such advances are more likely to come from the private sector.

"The government has far less expertise in picking winners and losers," says Solveig Singleton, director of information studies at the Cato Institute, a Washington think tank. She points to a General Accounting Office study a few years back which outlined the shortcomings of government-funded research and development and concluded that a large portion of it would have been funded by the private sector anyway.

Many industry observers believe that the commercial Internet grew out of government programs largely by accident. By the time the Web took off, the government had largely withdrawn itself from funding. These pundits also point to the opportunity costs of government-funded projects.

"As amazing as the Internet is today, we can't assume that it is better than what would have happened if the tax money used to build ARPA and NFSNet had stayed in the private sector in the first place," Singleton says.

Internet backbone pioneer William Schrader, chairman of PSINet in Reston, Va., agrees.

"Commercial Internet technology and applications have already outstripped all of the vBNS and Abilene activity," he says. "They have no chance of keeping up. The only reason the NSF investment might not have been totally wasted is that the funds were spent to educate graduate students. Future funding should focus on this, and not much else."

Breidenbach is a consultant and freelance writer in San Mateo, Calif. She can be reached at sbreidenbach@usa.net.

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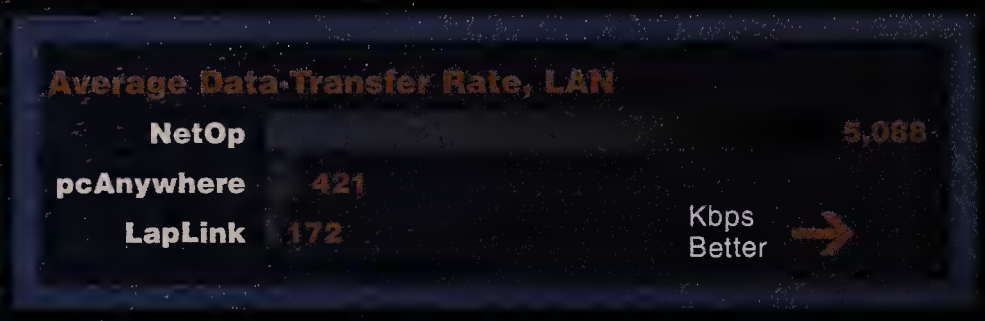

Reported by *Computer Reseller News*, May 24, 1999

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CrossTec Corporation

NetworkWorld REVIEW Antispam software

E-mail please, hold the spam

Three server-based software products keep unsolicited e-mail from wasting users' time.

BY TRAVIS BERKLEY

Whether it's a seldom-seen nuisance or an in-box clogger, e-mail spam is annoying. There are numerous programs to can spam at the client level, but a better solution for most organizations is to shut it off at the server.

We tested three products that seemed to be strong in different categories. Our winner, Lyris Technologies' MailShield, wasn't the flashiest program or the easiest to use, but it was best at the main task — stopping spam. Computer Software Manufaktur's Internet Mail Scanner was a close second. It didn't have quite the power and flexibility of MailShield when it came to catching spam, but it's still a very effective tool, with a nice administrative interface and good statistical and reporting tools. GFI Fax & Voice's Mail Essentials, which has less flexibility in fighting spam than the others, has many other nice features and was the only package that had additional features if it was a front end for an Exchange system.

The spam stops here

The real meat of these products is their ability to stop unwanted e-mail from wasting your users' time. The products intercept messages with questionable content and delete them or let an administrator decide what to do with them.

Holding message headers up to scrutiny is an easy and effective way to screen mail. There are two ways to use this technique — verification and authorization. Verification checks to make sure the addresses in various tags are valid. A message claiming to come from the bogus domain Make.Money.Fast would be nixed because this address wouldn't return a valid response from the Domain Name System (DNS). Authorization, on the other hand, lets you control whether you want to receive mail from a particular user or domain. Let's say SpamCorp.com is a valid firm but has frequently sent you mail that you'd rather didn't reach users. You can add SpamCorp.com to your list of domains from which you do not accept mail, even though a DNS query comes back OK.

Lyris' MailShield is the most flexible at scanning for spam. It has more options than most e-mail administrators will know what to do with. Its only drawback, compared with the other two products, is its inability to provide antivirus scanning.

MailShield can verify and authorize most fields outlined in RFC 822, the standard that defines Simple Mail Transfer Protocol (SMTP) mail. In addition, MailShield can limit the number of recipients who can receive a single piece of e-mail or simply slow the delivery down above certain thresholds.

MailShield also includes an interesting feature known as tarpitting. Used to discourage spamming, tarpitting is triggered when mail arrives from a domain or TCP/IP address that you have blacklisted ahead of time. MailShield will accept mail from this host, but it delays a specified amount of time between every command sent by the originating host. Effectively, it slows mail delivery from that host to a crawl without affecting performance on the receiving server. As the number of messages grows, the time adds up and the originating host must stay connected the entire time for delivery to be complete.

MailShield can also scan messages for strings that indicate spam. These strings can be single words, such as "XXX," or entire phrases, such as "make money fast." MailShield can also check the size of a message and check file attachment names. For example, you could have MailShield check for attachments called happy99.exe, or other well-known carriers of doom and gloom, and drop them.

MailShield handles offending messages in different ways. It can simply delete them, forward them to an administrator or let the message be delivered but prefix the subject with a tag, such as Suspected Spam.

In addition to its native capabilities, MailShield works with Internet-based services that help people eliminate spam. For example, the nonprofit Mail Abuse Prevention System maintains a Realtime Blackhole List (RBL) of known spam sites. Though disabled by default, MailShield can check with this service. However, using RBL can eliminate legitimate mail in some instances. If one person on America Online sends a spam message, RBL could mark AOL as a spam site, punishing many for the act of one. Lyris recommends using RBL only if the possibility of rejecting valid mail isn't critical. MailShield also works with the group's Dial-up User List (DUL) of TCP/IP addresses from ISPs known to have spammed.

Internet Mail Scanner

Computer Software's Internet Mail Scanner has an interface that is much easier to use than MailShield's. Internet Mail Scanner employs most of the same verification and authorization techniques as MailShield. Verification of addresses can be set for the From, Sender, Return Path and Message ID fields.

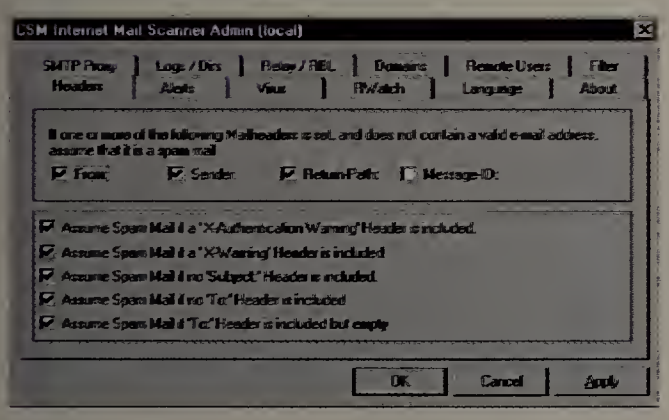
Additionally, there are five more

NetworkWorld Blue Ribbon — **Lyris Technologies MailShield**

With powerful scanning, strong configurability and good multiplatform support, Lyris MailShield wins a Blue Ribbon.

Setting the traps

MailShield lets you set numerous options for catching spam by looking at SMTP headers.



ScoreCard

NetworkWorld Blue Ribbon

	Antispam (50%)	Antirelay (15%)	Management (15%)	Other features (10%)	Installation (5%)	Documentation (5%)	Total score
MailShield	9	7	5	7	6	8	7.70
Internet Mail Scanner	8	8	8	5	8	6	7.60
Mail Essentials	7	7	7	9	8	8	7.30

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score.**

options, enabled by default, to automatically flag messages as spam: a missing or empty To header; a missing Subject header; or the inclusion of an X-Warning or X-Authentication Warning header. The omission of a To header can indicate that a message wasn't intended for a particular user; spam is often sent to users as carbon copy or even blind carbon copy recipients. Missing subject headers are a way of enticing users to open a message to see what's inside. Finally, various mail handlers can add the X-Warning and X-Authentication Warning headers if they are suspicious of the origins of the message.

For authentication, Internet Mail Scanner uses a text file that holds lists of users, domains and TCP/IP address ranges from which you do not want to receive mail.

As far as content scanning, Internet Mail Scanner only checks the Subject header for words or phrases. The same configuration file that holds the offending users and addresses also holds words and phrases that Internet Mail Scanner should consider as spam.

Internet Mail Scanner has one content-scanning feature that MailShield lacks. Internet Mail Scanner has two antivirus engines built into it, one by Trend Micro and the other by McAfee, which is the default. It also scans compressed attachments. Updates to the virus definition files are available as a separate subscription service.

Internet Mail Scanner can drop messages that are larger than a settable threshold in two ways: It can politely accept the entire message, then drop it, or it can terminate the connection as soon as the limit is hit. The default size limit is only 19K bytes, but enforcing this limit is not turned on by default.

Like MailShield, Internet Mail Scanner can take advantage of the RBL, but it doesn't support the DUL.

Mail Essentials

The third product, GFI Fax & Voice's Mail Essentials, has a variety of features but doesn't give you as many configuration options as the other two products.

When holding SMTP headers up to scrutiny, Mail Essentials only looks at the From header, but it can refuse an e-mail that doesn't have a header or has an invalid header. Mail Essentials can also be configured to refuse mail from domains you specify.

Mail Essentials does better in the arena of content scanning by employing a two-tier approach to checking messages. First, it can simply delete messages that contain key words and phrases, either in the subject or in the message body. But Mail Essentials can also forward questionable messages to an administrator for review. Mail Essentials terms this action "quarantining" the message. When a message is quarantined, an HTML version of the message is sent to an administrator, who can either approve the message to deliver it, delete the message, or delete it and notify the originator that the message was not delivered.

An interesting feature of Mail Essentials is the ability to block messages that are PGP-encrypted. Encrypted messages cannot be scanned for content, so allowing them to pass implies trust of the originator. Most spammers don't go to the trouble of looking up users' public PGP keys.

But Mail Essentials includes this feature for another reason. Mail Essentials can automatically encrypt all outbound mail passing through it using PGP if it has the proper public key. By installing PGP, which is not included but is available free to nonprofit and educational organizations, Mail Essentials can maintain a "key ring" of sites that use encryption. For example, if there is a company with which you do business, you may want to protect the content of your messages to them, but not messages to everyone else. Mail Essentials can see that a message is destined for a host for which it has a public key and automatically encrypt it. Likewise, when Mail Essentials receives a message from that site, it has the key to automatically decrypt it.

If Mail Essentials sees a message that is still encrypted when it tries to scan it, that indicates a user is trying to decrypt messages on his own at the desktop. The administrator can force users to use only the corporate encryption schemes.

Mail Essentials, like Internet Mail Scanner, can scan messages for viruses, but the engines are not included as part of the license. It knows how to interact with four popular engines (McAfee, Dr. Solomon's, Norton and F-Prot) or a custom scanner that accepts command-line parameters.

Mail Essentials doesn't currently use any of the Internet-based antispam services, though previous versions could use the RBL. Due to user requests, the company said it will probably bring the RBL back in a future release.

What about the middleman?

The flip side to spam is relaying. When a message is relayed, it is first sent to a host that in turn delivers it to the final recipient. This technique gives spammers unwarranted credibility by having their mail appear to come from a trusted source. But most legitimate mobile Internet Message Access Protocol clients need to relay their messages through a host, too. How do you let authorized users relay mail but keep unauthorized people out?

Lyris' MailShield lets you specify domain names and TCP/IP address ranges to allow or reject relay attempts. For example, you can let your internal users relay e-mail out, but not let foreign e-mails be relayed from your site to another site.

Computer Software's Internet Mail Scanner has similar antirelay functions turned on by default. Those defined as internal users can relay mail out through Internet Mail Scanner. You can also configure external users who are able to relay through the server, but not a whole domain. In addition, you can configure what days of the week and times of day relays will work. It has extra configuration options for handling relayed mail that slightly edges out the competition.

GFI's Mail Essentials prohibits receiving mail that isn't addressed to one of its internal domains. Relay checking is enabled, unless Mail Essentials doesn't know whom to protect, which would happen only if you deleted all local domain information. But there is a setting in which an administrator can define which domains are allowed to use it as a relay server. This can further be scrutinized by an IP address. Additionally, Mail Essentials can be configured to relay outbound mail destined for certain domains to mail servers other than the default.

Management

Having these programs up and running is nice, but there are times when you also need to customize them. MailShield lets you modify its rules, which are written in a proprietary scripting language.

Internet Mail Scanner can be configured to send a notice to administrators when it has relayed mail, received spam, found a virus or received a mail bomb, Internet Mail Scanner's name for an e-mail message that is above the size threshold. When it finds spam or a virus, Internet Mail Scanner can send you a copy of the offending message. There is also an advanced alerting feature that notifies you when specific addresses pass the scanner, whether inbound or outbound.

In most cases, configuration changes take effect when you click on the "apply" button or close down the configuration tool. There are a few well-documented instances when a configuration change requires restarting the service, but these are changes that don't happen frequently, such as changing the virus scanning engine.

Mail Essentials also commits changes immediately and doesn't rely on any accompanying text files.

continued on page 75

NetResults

	Pros	Cons
MailShield **Lyris Technologies** (888) 248-9519 www.mailshield.com **$4,995** for server, no user limit.	▲ Extremely configurable. ▲ Scans full message body.	▼ Text-only interface. ▼ Limited statistics.
Internet Mail Scanner **Computer Software Manufaktur** (801) 547-0914 www.csm-usa.com/product/ims **$11,995** for 1,000 users per year without virus scanning. **$17,995** for 1,000 users per year with virus scanning.	▲ Available virus scans. ▲ Good remote administration and monitoring.	▼ No message body scan.
Mail Essentials **GFI Fax & Voice** (716) 265-1380 www.gficomms.com **$1,995** for unlimited use.	▲ Scans subject and body. ▲ Snaps into Exchange. ▲ PGP encryption available.	▼ Few headers are checked.

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Continued from page 72

In addition to making changes, it's also good to be able to check up on the software, make sure it's running right and even get some statistics about how much work it's doing for you.

MailShield lacks remote monitoring tools, and its log files can only be viewed at the server itself. MailShield can log on to a file on the host system or place entries in the host machine's event log — the Event Viewer for Windows NT or the syslog utility on most Unix systems. While this helps you get a handle on the instances of bad mail, it doesn't show you how much "good" mail is being passed, and it certainly doesn't give numeric values for a quick and dirty comparison over time.

Internet Mail Scanner has a nice companion utility called the Remote Watch Monitor that lets you see exactly how much traffic it handled, how much of it was spam and how much was relayed. It keeps a running total, as well as a graph of the last 40 seconds, and tabulates the number of viruses caught.

The Web Monitor that accompanies Mail Essentials lets you remotely attach to and check the health of the server. It can access the delivery queues, logs for each day's sent and received items, and a log of all sent and received items.

More goodies

In addition to some features mentioned earlier, MailShield can archive messages off to a disk as they pass through the server. This could be particularly handy to sites where e-mail is considered public record and the organization needs to keep copies without burdening users. MailShield was available on the most diverse list of platforms, including all Windows platforms, Solaris and Linux.

Other than the inclusion of virus scanning, Internet Mail Scanner sticks to the basics. It doesn't include features that aren't part of its core task.

Mail Essentials has the largest goodie bag. Besides the features mentioned above, Mail Essentials can archive your e-mail, inbound and outbound, as it crosses the server. It can also compress attachments that weren't compressed when they left the desktop. If the size gain achieved by compression is better than a threshold you can set, Mail Essentials automatically zips up the attachments, even compressing them to a self-extracting archive if you wish.

Mail Essentials can be configured to send an automated reply if it scans a message destined for a particular user. The condition for the autoreply can be tied to text in the subject. For example, if the sales account receives a message with the word "order" in the subject, an autoreply can be generated to thank the sender for the order, and to assure the sender of a timely response. The software can even create a tracking number to tie the automated response to the original message.

Installation and documentation

Installing Lyris' MailShield was straightforward and took very little time. However, configuration is another issue. Most of MailShield's filters and functions are governed by text files that you need to manually edit to change. Even though each file has a descriptive header, it's troublesome to remember which file controls what. The software needs to be more helpful in walking you through modifying the configuration. The program lets you specify how frequently it checks for a new configuration. Keep this interval short when you're first getting the hang of things, then lengthen it once you're sure things are working the way you'd like.

The HTML-based documentation for MailShield is useful and thorough, though we would have liked some printed documentation, as well.

MailShield also installed quickly and painlessly as a NT service. When configuring the software to tell it details of what server it's delivering mail to and where to send outgoing mail, terms such as "client" and "server" get a tad confusing. But even if you enter the information incorrectly, you'll quickly find your mistake when using the straightforward administration tool.

Like MailShield, Computer Software's Internet Mail Scanner's documentation is presented in HTML format. It includes example screen shots of each pane and a description of the fields, but it's pretty thin. Some of the sections would benefit from a few extra paragraphs of detail and better examples.

GFI Fax & Voice's Mail Essentials was also a straightforward install. It is the only one of the three products that can tap into Microsoft Exchange to enable content scanning based upon specific Exchange users. The process is simple. When completed, the Mail Essentials tabs are visible from the Exchange administration tools, as well.

Mail Essentials gets credit for providing complete printed manuals, but its online documentation comes only as Windows Help files.

Conclusion

Each product we tested has its own niche. If you want raw power, configurability and good multiplatform support, look no further than our winner, Lyris' MailShield. If you want a solid performer with a cleaner interface and better reporting, Computer Software's Internet Mail Scanner may be right for you. And if you want a nice tool with lots of extras, especially if you're running Exchange, give Mail Essentials a look. All in all, you won't go wrong with any of them.

Berkley is LAN support supervisor at University of Kansas Computing Services in Lawrence. He can be reached at berkley@ukans.edu.

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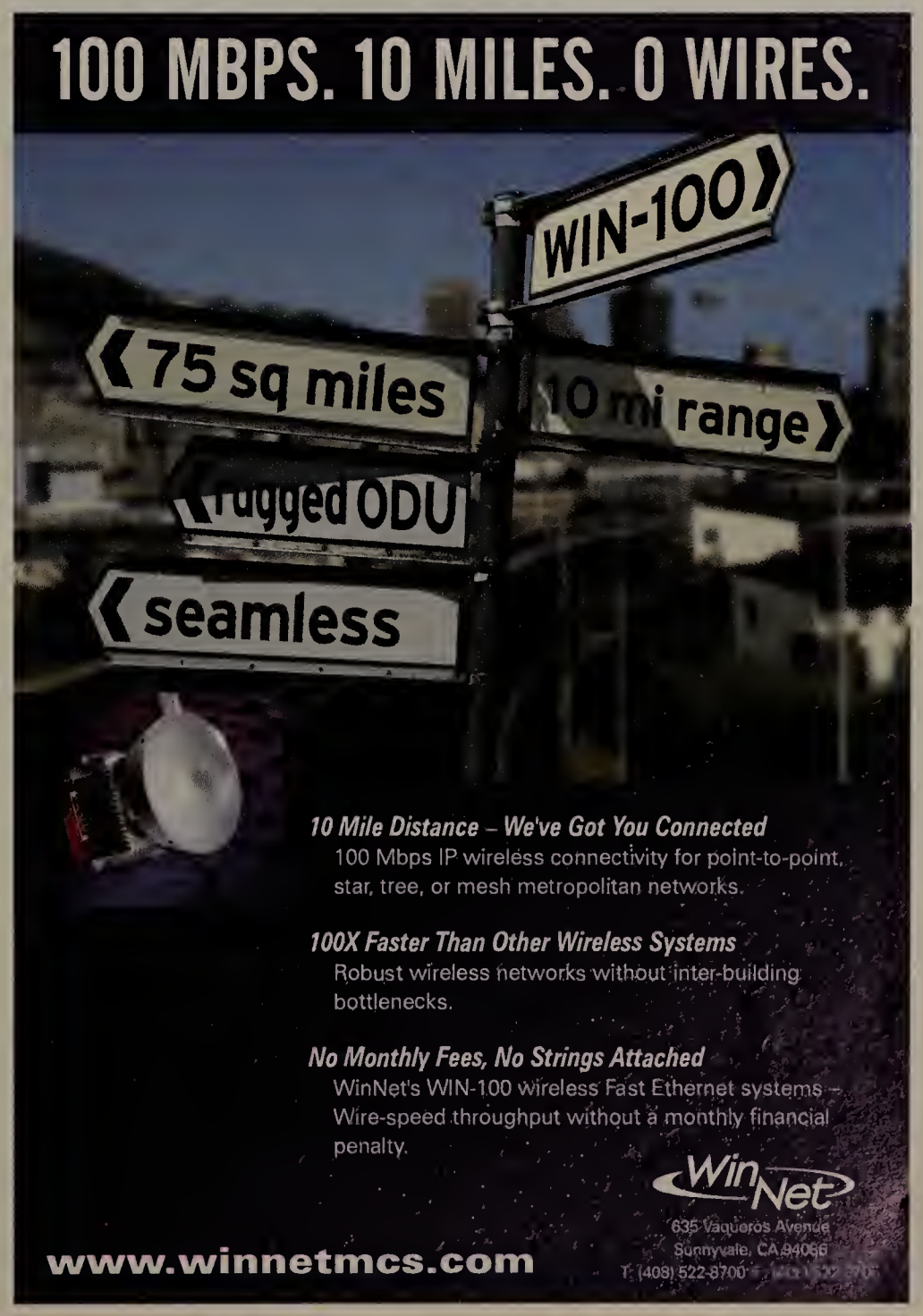
Each package can be installed on the same machine as the mail server or on a separate machine. We elected to use separate boxes. We used a Microtech 200-MHz Pentium Pro with 64M bytes of RAM and a 4G-byte disk running Windows NT 4 with Service Pack 5. Each product passed its messages on to a Linux machine running the standard sendmail daemon.

We created several user accounts on the Linux box, then sent the messages from a variety of hosts and e-mail packages. We tested for conditions of too many recipients; various invalid, falsified or omitted headers; phrases in the subject line and the message body; and relay prevention.



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Building consensus

How to forge agreement with upper management on key technology decisions.

BY PAUL DESMOND

In this age of e-commerce, upper management looks to IT more than ever to provide technology direction. But, as with any business-related decision, there isn't always consensus. Sometimes the IT group and corporate leadership are at odds over a technology-related decision. However, there are steps you can take to keep such situations to a minimum.

Blue Cross/Blue Shield of Massachusetts in Boston uses cross-functional teams to evaluate new technologies, says Ed Esposito, director of IT services for the health insurance provider. End users in the group examine the technology from a utility standpoint, while IT professionals examine it more from an architectural point of view.

"Although some selections are close, it's been my experience that there's always a feature we can all point to that makes one product better than another," Esposito says. The firm keeps in mind how well the technology will meet the business need it is intended to address. "We use that as a foundation," he says.

Major decisions, such as a companywide network operating system, might require senior executives to be taught new technologies. If that's the case, Esposito's group will invite team members to its lab, or set up a lab in a team member's organization and show prototypes to demonstrate how the technology supports the business function in question. There may also be field trips to other companies that are employing the technology and reviews of professional product evaluations.

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"We try to give them a level of comfort and knowledge that we are introducing the right technology to support the business need," he says.

Blue Cross/Blue Shield is on the right track, especially with its focus on examining how well a technology meets business needs, says John Thorp, consulting fellow at DMR Consulting Group in Edison, N.J., and author of *The Information Paradox: Realizing the Business Benefits of Information Technology.*

"If you're going to continue to make arguments in terms of 'This is state-of-the-art technology,' you're going to run into a brick wall," he says. "You've got to make the arguments in a context of business value."

Ed Esposito of Blue Cross/Blue Shield of Massachusetts says his firm uses cross-functional teams to evaluate new technology.

FURNALD GRAY

One key way IT can contribute to that discussion is by pointing out all the things that have to be done — from a technical and management perspective — if the business need associated with a new technology is to be met.

Implementing a SAP enterprise resource planning system, for example, will do little good without business policies to take advantage of it. A large manufacturing company in the Northeast found that out — the right way. It formed cross-functional focus teams, often using employees who had no connection to the project in order to get a truly objective perspective, according to a data communications manager at the firm who requested anonymity. In the course of this exercise, the company identified processes that needed to be streamlined and others that weren't needed at all.

The ripple effect that plugging in a new technology has on the rest of the network is one of two things Thorp says executives often miss when it comes to implementing new technology. The other is changes that have to be made to business processes and even peoples' jobs in order to realize a benefit from the new technology.

"The IT people, if they can speak in business terms and outline the context, can play a leadership role in helping the business understand that," Thorp says.

Speaking in business terms is often the biggest challenge for an IT professional. "You've got to be able to come up with analogies that relate to the same issues," he says.

Another way to learn to think in business terms is to get involved with various corporate efforts. You can participate in different teams, quality initiatives and subcommittees, making sure your presence is felt. Many of these are volunteer efforts through which you can learn more about business requirements that technology can help address.

An important side benefit is you can establish relationships with key upper management personnel which may prove valuable down the road, should there come a time when IT and management are at odds over a technology decision. These people can give you a foot in the door to air your concerns, says Tom Whitley, owner and president of the IT recruiting firm Management Recruiters in Kannapolis, N.C., and author of Network World Fusion's "Focus on Careers" column.

Before doing that, however, you've got to do your homework, he says. Document the functionality of your technology choice as well as cost, reliability statistics, user comments and other supporting material. In short, Whitley says, "be prepared."

Desmond is vice president of King Content, a strategic publishing company in Southborough, Mass. He can be reached at paul_desmond@king-content.com.

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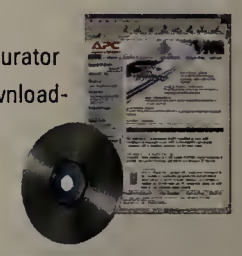

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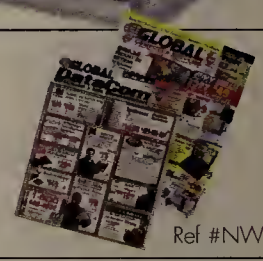

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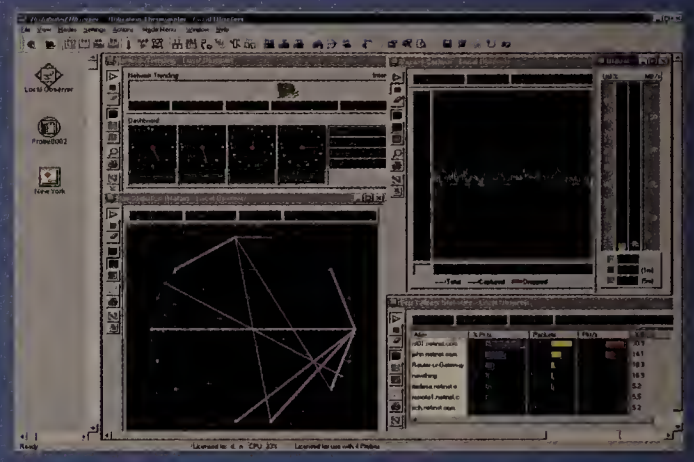

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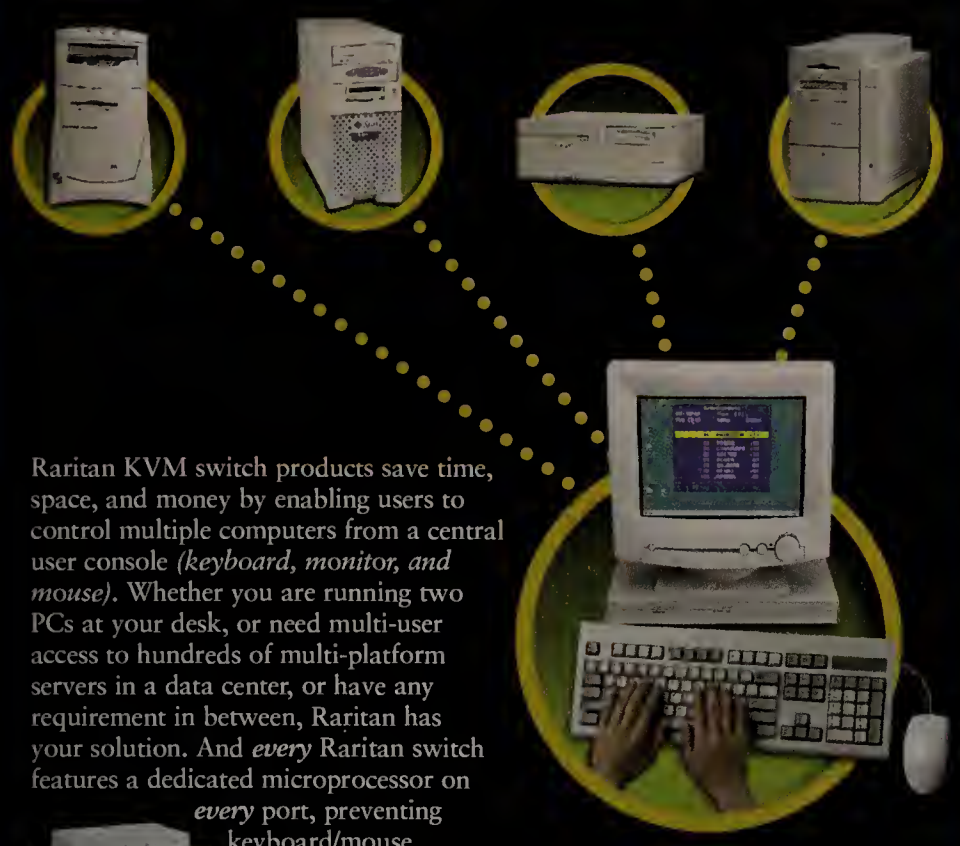

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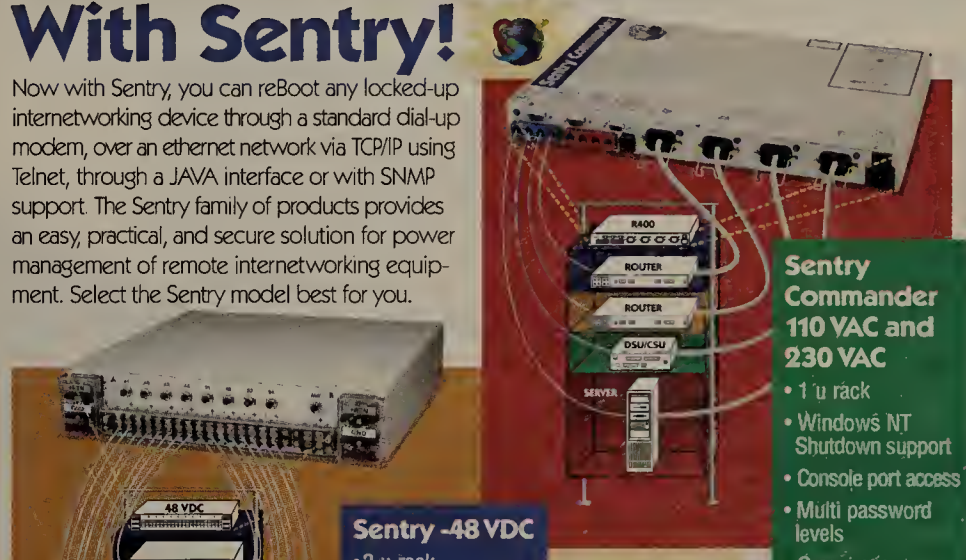

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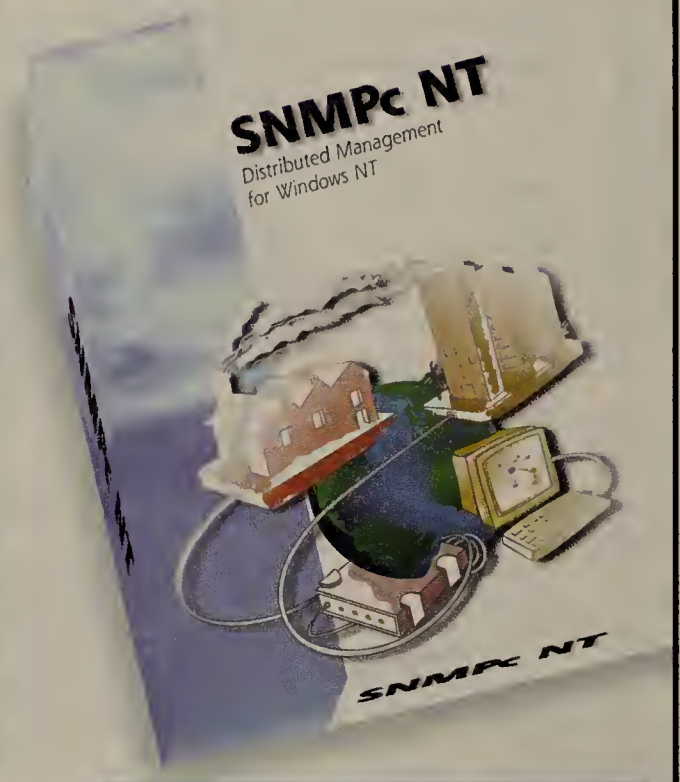

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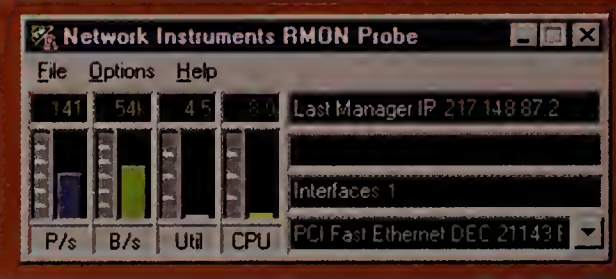

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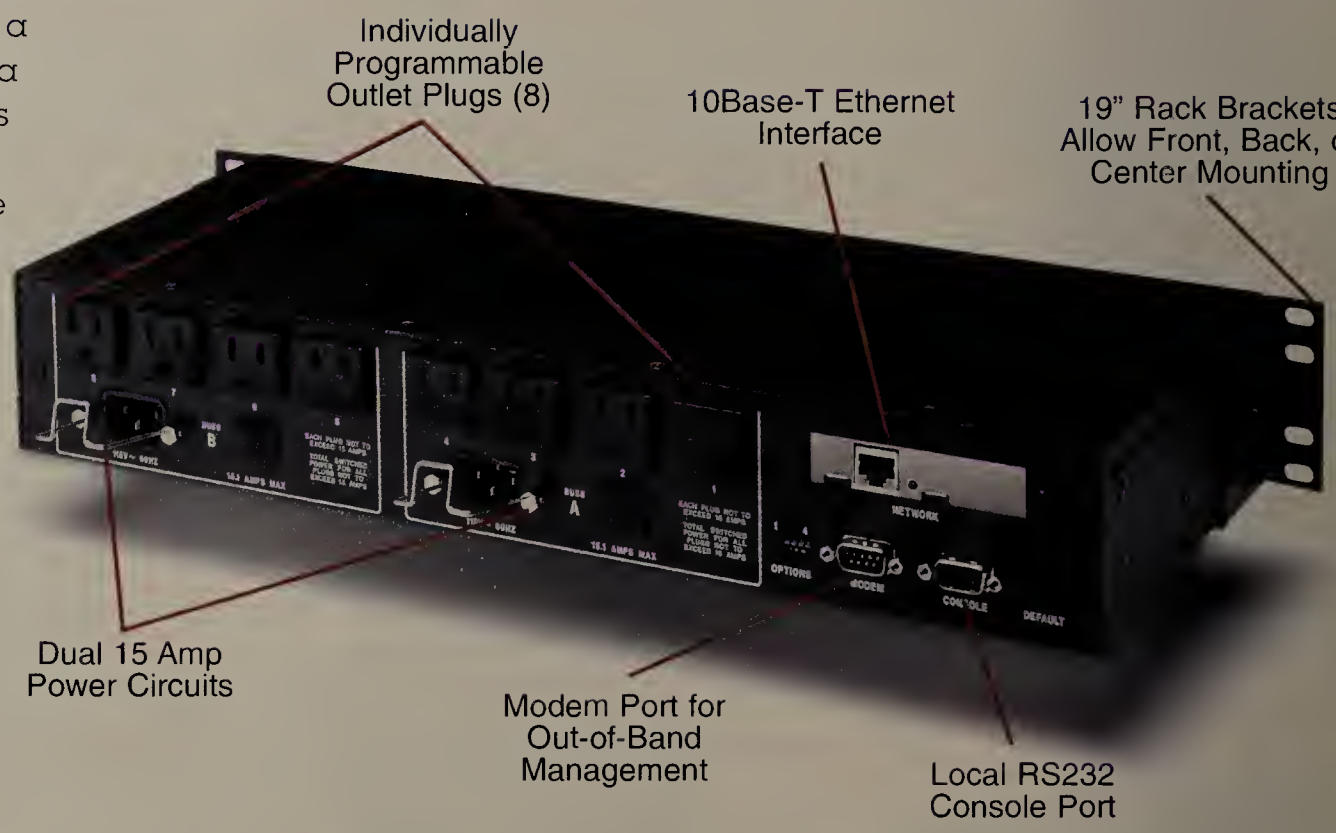

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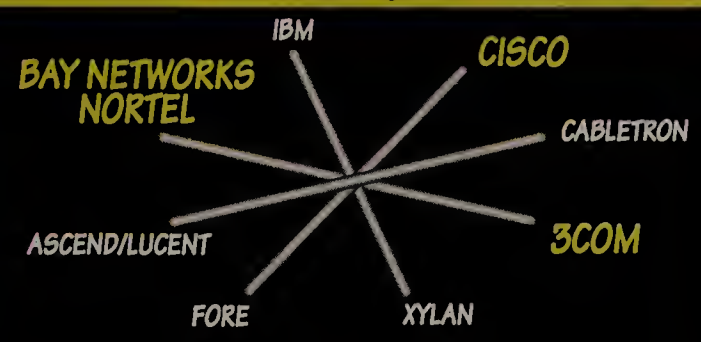

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- *Join the E-marketplace club.* This story looks at E-commerce procurement.
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Software Engineer (Framework Group) wanted by investment banking company in Greenwich, CT to work with systems developers in mortgage backed area. Must have a Master's in Computer Science or Electrical Engineering and 1 year experience as software engineer or programmer/analyst designing, developing, testing, implementing, enhancing and maintaining complex real-time financial systems applications, utilizing distributed object-oriented programming, DCE technologies, UNIX, Windows NT, C/C++, Perl and Shell scripts, SQL and a relational database management system in a client/server environment. Respond to Dave MacWilliams, Greenwich Capital Markets, Inc. 600 Steamboat Road, Greenwich, CT 06830.

Sr. Software Engineer needed to dvlp & implmt s/ware solutions for Web-based appl. using Sapphire Web, Java, HTML, Oracle, SQL. Apply to: R. Gorga, Bluestone Consultants, 1000 Briggs Rd, Mt. Laurel, NJ 08054.

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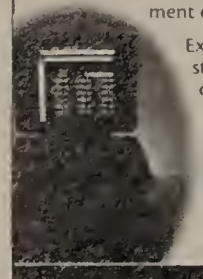
The candidate we select will be responsible for sustaining and test engineering. As a part of sustaining engineering, you will take responsibility for second line technical support, bug fixes, and quarterly updates of the NetMaker XA products. Test engineering functions require design and implementation of automated and manual Unit and Integration Tests for NetMaker XA and MainStation products, with implementation in C++ and Tel.

We require a BS or MS in Computer Science or Computer Engineering, along with knowledge of IP and/or ATM Routing and Network Engineering. Course work in Network Engineering, co-op experience and/or work experience will be considered. Experience in formal software testing and test automation, C++, OSF/Motif, UIM/X, SRT development experience are all essential.



Excellent compensation package including stock options is available to the selected candidate. Interested individuals are invited to forward/fax/e-mail (preferred) resume to: Ann Marie Gordon, Operations Manager, Make Systems Laboratories, 200 Regency Forest Drive, Suite 150, Cary, NC 27511-8502; voice:919-461-2445, ext 238; fax:919-461-2447; e-mail:gmiller@makesys.com http://www.makesystems.com

make systems, Inc.

DIRECTOR OF INFORMATION SERVICES

Well respected educational organization seeks a candidate with a minimum of 5 years experience in application software design & programming, as well as background in network & hardware administration. Must have experience in managing and supervising an IS dept. Should have programming experience in MS Access & one of the following langs: Basic, Visual Basic, Paradox, DBase, or PowerBuilder. Experience working in an academic environment utilizing the Datatel software pkge a+. Should have working knowl of NT/Back Office, Win 95, firewalls, PC/Server configurations & diagnostic experience, with a full understanding of lan/wan security, NT domains, trusts, vpn & ras.

Resumes in confidence to:Box Kev2699
Fax: 212 358-8378
email:KevinAdMan@aol.com

Technical Consultant

Wanted by ocean transportation company in Jacksonville, FL. Must have Bach in Comp Sci or related field, 4 yrs exp in development of on-line systems using COBOL II in a CICS environment and 2 yrs exp with HR/Payroll PeopleSoft package installation and relational database systems development. Respond to: HR Dept., Crowley Maritime Corporation, 9487 Regency Sq. Blvd., Jacksonville, FL 32225.

Multiple openings for Programmer Analysts, Project Leaders and Sr.Consultants. Must have BS/MS(CS) or eqiv. and exp. in one or more of following: VC++, COM/DCOM, MFC, ASP, ATL, IIS, MTS, ADO, JAVA, HTML/DHTML, CORBA, EJB, NETDYNAMICS, ERP/SAP, NETWORKING, LOTUS NOTES ADMINISTRATORS, WEB TESTERS. Send resumes to: e.Solve technologies, 165 Washington Street, Quincy, MA 02169. OR jobs@esolvetech.com

Systems Analyst

Boston, MA; Analyze, design and implement Distributed Financial System using Object Oriented analysis, C++ , Sybase, UNIX, Windows NT & PERL. Provide technical support. Req'd. Masters in Engg. or Comp. Sci. or Math. 1 year exp in job offered. 40 hrs/wk, 9:00am-6:00pm, $100,000/yr. Submit two (2) copies of resume to response to: Case #19983293, P.O. Box 8968, Boston, MA 02114.

Systems Analyst

w/ 2 yrs exp analyzing user reqmts, procedures & problems to automate processing or improve existing comp systm in IBM mainframe/midrange envrmt using RDBMS, SQL, COBOL & IBM RS/6000. Bach in comp sci or equiv or related field. Edu. may be domestic or foreign & may be edu. equivalency. Send resume to Pyramid Consulting Inc., 5335 Triangle Pkwy, Ste 510, Norcross, GA 30092. Sal $50K/yr.

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w/2 yrs exp in analysis, design, development & implementation of software, systems and applications using COBOL, C++, JAVA and Oracle 7.x. Salary $60,000. Multiple Position openings. Send resume to: Datasoft Technologies, Inc. 3473 Satellite Blvd., Ste 111, Duluth, GA 30096.

SOFTWARE ENGINEER:

Design and development of Business/Commercial application systems in a Windows 95/NT environment; Demonstrated ability in Powerbuilder 5.0; Demonstrated ability in SQL Server 6.5; Demonstrated ability in Visual C++. Requires: B.S. in Maths, Computer Sci, Engg or related field plus 2 years experience in job offered or software development; 40 hrs/wk, 8:00 a.m. to 5:00 p.m.; $60,000/yr. Send two (2) copies of resume/respond to: Case #19983155, PO Box 8968, Boston, MA 02114.

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needed to design, dev, analyze & test computer programs using PowerBuilder, Oracle, MS SQL, Sybase & Forte. Apply to: HR, EXE Technologies, 300 Baldwin Tower Blvd, Eddystone, PA 19022.

Software Engineers

(multiple positions) sought by Software Development Co for Maritime Shipping Industry for job openings in Somerville, NJ. Must have Masters in Engg, Comp Sci, Applied Physics, Math or MIS. Respond to: HR Dept, Interlink Transport Technologies, Inc., 722 Courtyard Dr, Somerville, NJ 08876.

Senior Technical Consultant

sought by Software Services & Development Firm in Upper Saddle River, NJ. Must have BS in Comp Sci & 2 yrs comp exp. Must have 2 years programming exp on UNIX (AIX) platform developing in IBM's DirectTalk environment. Respond to: Ms. I. Papp, 600 East Crescent Ave, Upper Saddle River, NJ 07458.

Programmer Analyst

w/2 yrs exp in analysis, design, development & implementation of applications in IBM mainframe envrmt using CICS, JCL and COBOL. Bach in comp. sci or equiv. Salary: $60,000. Multiple Position openings. Send resume to: Datasoft Technologies, Inc. 3473 Satellite Blvd, Ste 111, Duluth, GA 30096.

Programmer Analyst

Malden, MA; Analyze, design and develop a Value Based Management System using object-oriented, client-server technologies using Oracle, PL/SQL, SOL/PLUS and PFC-PowerBuilder as a front-end tool. Prepare test plans, unit testing & system maintenance guide. Req'd. 2 yrs exp in job offered. 40 hrs/wk., 9a-6p., Mon-Fri., $60,000/Per Year. Applicants should submit two (2) copies of resume in response to Case #19983377, P.O. Box 8968, Boston, MA 02114.

Programmer Analyst

Malden, MA; Analyze, design and develop Business Application System based on Structured Analysis, Design Methodology and ERD data modeling techniques on HP3000 machines and Windows NT servers. Design and implement HP3000 Applications systems using MPE, PowerHouse, Cobol, Transcat. Req'd. Bachelors in Comp. Inf. Sys.or Engg. or Math. 2 yrs exp in job offered or 2 yrs exp as IT Solution Specialist. 40 hrs/wk., 9a-6p., Mon-Fri., $26.39 Per Hour. Applicants should submit two (2) copies of resume in response to Case #19983082, P.O. Box 8968, Boston, MA 02114.

Programmer: to design, implement, edit & maintain C/C++ and Progress user application program in the Unix environment. Req. MS or equivalent in CS or MIS; Proficiency in Visual Basic, Windows NT and Unix. $66,500.00/yr., 40hr/wk, 8:00 a.m.-5:00 p.m. Contact Information Systems Manager of Sivaco Georgia, 24 Herring Road, Newnan, GA 30265, email: frederick@sivaco.com

Director of Software Operations (VP) sought by firm that provides integrated IT infrastructure solutions. Must have Master's or equiv. In Business Admin., Finance, or rel. field, plus experience managing software development operations. Resumes to: HR, InteQ Corp., One Van de Graaff Drive, Burlington, MA 01803.

Computers: Software Engineer sought by Researcher & Dvlpr in Comp Sci. for job opening in Princeton, NJ. Must have Bach in Comp Sci or Math and 1 yr exp researching, dsgng & dvlpg comp s/ware systems in conjunction with h/ware product dvlpt for medical, industrial, military, communications, aerospace & scientific applics. Respond to: MECA HR, (SE), Panazip 3C-6, 1 Panasonic Way, Secaucus, NJ 07094; (2 positions available).

Database Administrator wanted by New Jersey based IS/IT Consulting Services Firm for job openings throughout US. Must have 5 yrs s/ware exp. Respond to: HR Dept, Avenir, Inc., 16 Pearl St, Ste #205, Metuchen, NJ 08840

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S/ware Design Co, Peekskill, NY. Seeks Programmer/Analyst using object oriented methodology to dsgn & dvlp fin'l analytical s/ware for CMOs, MBS, ABS users; implmt & test new systm; dvlp & dsgn internal d/base. Win applics portable to UNIX; maintain s/ware for internal use & reverse engg; dvlp new products like CMO structuring modules using C/C++, Win 95/NT, ODBC/SQL. Req BS (or equiv) in CS or rel field, 2 yrs exp in multi vendor applic dvlpmt environ. Demo'd knowledge & exp CMO, MBS, ABS. Reply to Prometheus Software Consulting, Peekskill, NY Fax: (914) 734-2272, jobs@chasen.com

Systems Analyst sought by Textile Mftr/Marketer in Winston-Salem, NC. Must have Bach or equiv in Sci & 2 yrs s/ware exp. Respond to: HR Dept, Hr Manager, Sara Lee Shared Services, 531 Northridge Park Drive, Rural Hall, NC 27045.

Database Administrator sought by Firm involved in Technical Solutions for business in Norwood, MA. Must have 1 yr database exp. Respond to: HR Dept, ADZAP, Inc., 210 Neponset St, Norwood, MA 02062.

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Investment Management firm seeks a Software Engineer for trading systems to provide 24/7 hardware and software support for the computer system utilized by the company's commodity/currency trading desk. Duties also include developing software interfaces linking the trading desk with research and accounting groups, writing and customizing software programs for the trading desk and supporting/ maintaining existing trade programs. Master's degree in Computer Science required. 1 yr exp in job/duties or 2 yrs. exp as Software Engineer designing/ implementing performance monitoring systems & developing user interfaces. Salary according to experience. Send resume including current salary to RTC, 600 Route 25A, East Setauket, NY 11733, Attn: HFTZ

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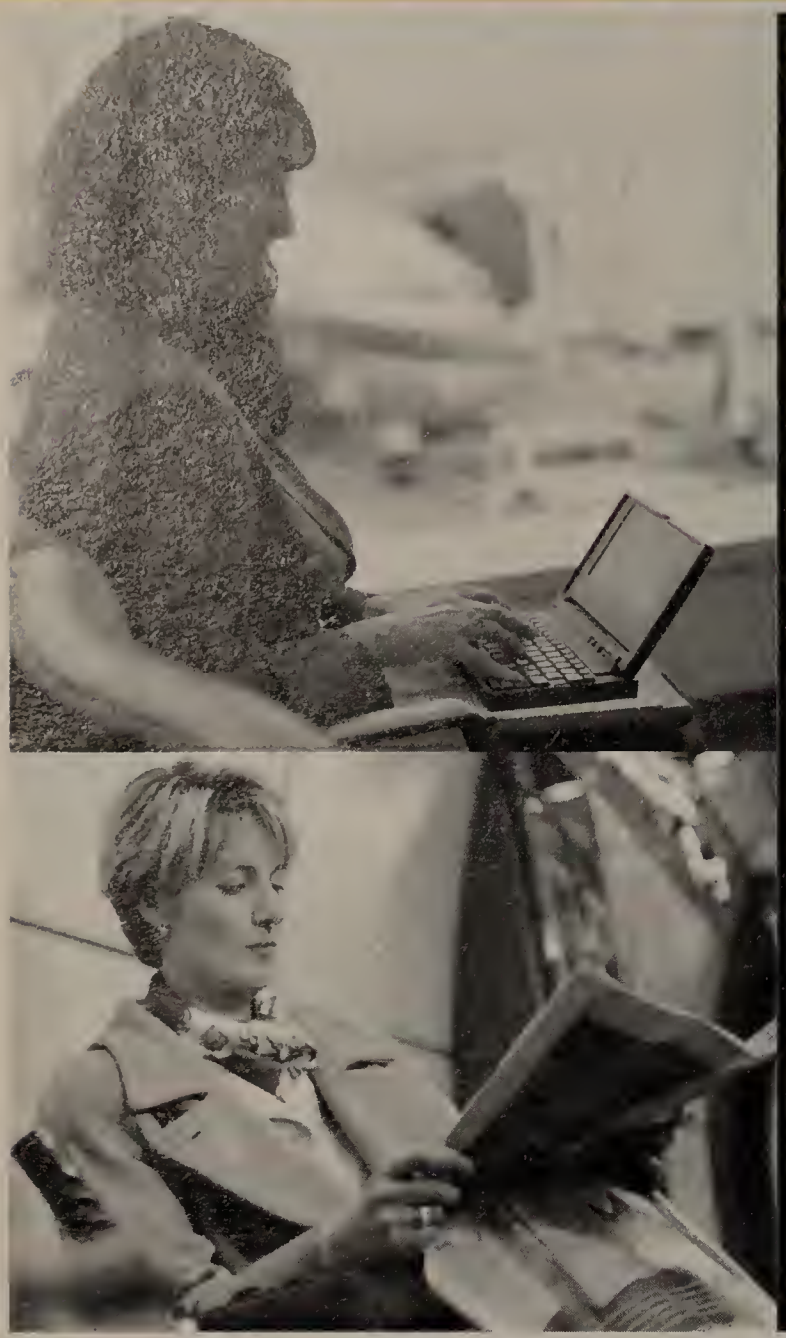

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Provide software solutions to multinational clients and code complex customer service workflow solutions using Pegasystems' developer toolkit, HTML and JavaScript, in the following multi-platform environments: UNIX, NT and MVS. Job Code: PEGABSA. Senior-level positions also require project leadership responsibilities. Job Code: PEGABSASR

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Please send resumes to: Sandy Barker, Pegasystems, 101 Main St., Cambridge, MA 02142 or fax (617)374-9620. Please specify Job Code. EOE

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For over 20 years, Acxiom/DataQuick has been providing data solutions to businesses throughout the U.S. and we are currently migrating our successful products to an e-commerce environment. A Senior Development Manager with solid experience is needed to lead a team that develops products for the Internet and Windows. BA or BS in Computer Science or related field or equivalent, knowledge of Microsoft Visual C++, J++, VB, VFP, Visual Source Safe, MFC, ATL COM development, 32bit Windows development, Internet development, databases and SQL. Knowledge of Object Oriented design, in-depth knowledge of software development lifecycle, 5+ years experience managing projects, developing plans, and designing specs; successful experience leading a team, including technical expertise, coaching, and training. Knowledge of real estate, lending and insurance industries a plus. Send resume and salary requirements, referencing Job Code CR101 by mail/fax/e-mail to Acxiom/DataQuick, OD, 9620 Towne Centre Dr., San Diego, CA, 92121; fax: 858-455-0728; e-mail: resumes@dataquick.com. Visit us at: www.dataquick.com.

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Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in PowerBuilder, Sybase, Erwin and PFC. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of PowerBuilder, Sybase, Erwin and PFC. Salary: $66,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Terry Kinney, Armstrong County Job Center, 1270 N. Water Street, PO Box 759, Kittanning, PA 16201, Job No. 9105759.

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to design, develop and maintain application software for various insurance applications using Powerbuilder, Sybase, C, Visual C++, Perl, Case Tools, Visual Basic, Unix Shell and Oracle on UNIX/LAN platforms. Require: M.S. degree (or equivalent) in Computer Science or an Engineering Discipline, with a demonstrated ability to perform stated duties gained through prior work experience/academic coursework. A B.S. degree with five years of progressively responsible experience will be considered equivalent to the M.S. degree. Extensive travel on assignments to various client sites within the U.S. is required. Salary: $70,000 per year, 8:00 am to 5:00pm, M-F. Apply by resume to: Raghavendra Kulkarni, President, Pro Softnet Corporation, 3235 Satellite Blvd. Bldg. 400, Suite 300, Duluth, GA 30096; Attn: Job BR

Senior Software Engineer: Design, develop and implement computer software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have one year of experience using: 1 of Group A and 1 of Group B and 1 of Group C; QR 2 of A and 1 of B; QR 2 of A and 1 of C as follows: Group A - DB2, IBM3090, IBM ES9000, MVS, IMS, IDMS; Group B - CL/400, CICS, TSQ, VSAM; Group C - TELON, CQBQL, JCL, AS/400, RPG/400, CQBQL/400. Masters's degree in one of several limited fields: Computer Sci/Apps, Eng., Chem., Math or Physics. Will accept Bachelors with 5 years of progressive experience as a computer professional. Salary is $70,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Mr. Clem Pizzutelli, Manager, Uniontown Job Center, 32 Iowa Street, Uniontown, PA 15401. Reference Job Qrder No.: 9105759

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Software Engineer

to provide on-site consultancy to analyze, design, develop, test, implement and support business application software for legacy systems using Java, C/C++, IBM Visual Age, AS400, DB2, SQL and interface of Mainframe databases DB2, IMS with Web applications in client/server and object-oriented environment; analyze client's requirements; develop distributed systems, network integration and systems software. Requires; M.S. in Computer Networks and System Analysis. 40% travel to client sites within the United States required. Salary: $65,000 per year, 8:30 am to 5 pm, M-F. Apply with resume to: President, YASH Technologies, Inc., 2100 Parklake Drive, NE, Suite F, Atlanta, GA 30345-2167.

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CSC Outsourcing, Inc.
Illinois
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Virginia
Software Engineer

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Novell,
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and the Novell Internet Messaging System.

Novell announced last year it had also tested the cPro concept with two other sites, MyRealBox and DigitalMe. MyRealBox is a Web-based free e-mail service. DigitalMe is an online service for users that lets them store personal information, access sites through a single password, fill in registration forms automatically and create address books.

Shirk would prefer to find specialized ISPs to partner with that will host Novell products and technologies, rather than build a huge Novell data center to handle services. The company is negotiating with a number of large telecom companies, ASPs and ISPs to take part in this plan, Shirk says. But he declines to name them.

Richard Reid, manager of worldwide messaging and directory for advertising holding company True North Communications in Chicago, is an advocate of the outsourcing concept.

"More and more we are partnering with integrators, vendors and developers to do our work," Reid says. "We can't keep up with everything that's coming out. Someone who can come in and do that right away is important."

That's where iChain could help. IChain products and services will let companies assemble, outsource or lease secure, managed, directory-based e-commerce sites from its own products and those of its partners and third-party vendors.

IChain uses NDS eDirectory and eliminates the need for a corporate firewall by offering a customizable security system that will let enterprise users give their customers access to services they define.

"A couple of years ago, users were huddled behind their firewalls," Schmidt says. "They made sure that all the bad people out there couldn't get into their networks. The problem was, their customers were out there, too."

Novell will use existing products and services to equip iChain, as well as some new Novell products and packages from its partners. These products include NDS eDirectory, security products such as the Certificate Server and FireWall for NT, its ZENworks management software and eGuide.

For instance, partner Whittman-Hart, an e-business provider, introduced e-Catalog, an e-commerce package that lets customers see a personalized catalog of products and services. Among Novell's iChain partners are IBM, Compaq, PeopleSoft and Perot Systems.

The directory is key

NDS eDirectory, the crux of iChain, is Novell's cross-platform repository for collecting information and data about equipment, resources and transactions — including the personal identities and characteristics of its subscribers. Novell Certificate Server is used to issue secure digital certificates.

Using information stored in the directory, companies will also be able to bill and account for each e-commerce transaction and manage revenue reporting and analysis.

"At its core, iChain is a directory services play that allows companies to set policies and provision applications for internal, as well as external, use," says Neil MacDonald, an analyst with Gartner Group, a consultancy in Stamford, Conn.

"For us, iChain is key — it centralizes data in a directory and lets us share it," says Chip DiComo, network manager with Hellman Worldwide Logistics in Miami. "One of the biggest headaches we have is producing address books for business partners so they can reach our employees worldwide.

"That's just the start. With iChain, we can actually start conducting business and doing authorizations," he says.

IChain will be available in 60 days; ePro services will be available later this year.

Novell: www.novell.com

Intel,
continued from page 1

switching and traffic load-balancing products dubbed NetStructure, specifically designed to address the hassles faced by companies when they try to integrate e-commerce traffic management into their networks. The announcements will be part of a broad product rollout, according to sources close to Intel. Intel declined to comment on the announcements.

The NetStructure family

The new line of communications products will include the NetStructure e-Commerce Accelerator 7110 and a family of devices called NetStructure Traffic Directors. The boxes are designed to speed e-commerce transactions and be easy for network professionals to install. The e-Commerce Accelerator is at least in part derived from technology Intel obtained through its $500 million purchase of Ipivot last fall.

The e-Commerce Accelerator 7110 serves as an encryption/decryption device used to process secure transaction requests. The device sits on the network between a front-end server and back-end host and will be able to handle as many as 1,000 secure transactions per second.

The box works with most major Web servers, including Apache, and those from Microsoft and the Sun/Netscape Alliance. A key feature will be technology that allows the device to offload cryptographic-related processing for secure transaction requests that would otherwise be processed on a Web server. The idea is to speed up overall transaction time.

The NetStructure Traffic Director includes three models; the 7140, 7170 and 7190. The 7140 addresses Layer 4 traffic management issues, using response times to balance traffic loads between servers. Network managers can set priorities for requests, including e-commerce transactions. This device could sit between a router and server farm.

The 7170 uses Layer 7 application-specific switching to prioritize requests based on user profiles and URL addresses. The 7190 MultiSite Director allows companies with e-commerce servers in different locations to send requests to whichever server location can process the transaction most efficiently.

Sources say the traffic control and security features of the Traffic Directors and e-Commerce Accelerator products may also be added to Intel's existing Layer 2/3 Express 6000 switch — a device aimed at the large enterprise, according to one source close to Intel.

Building support for IX

As part of this announcement, Intel also plans to trot out a bevy of network companies supporting its Intel Exchange Architecture (IX). The architecture, for which Intel set up a $200 million investment fund in September 1999, defines reprogrammable silicon for use in network devices such as routers and is based on open standards.

Supporters of IX include Cisco and 11 other vendors. Sources close to Intel say at least a dozen others will be added to the list this week, but Intel declines to name those vendors.

The Internet is exactly why Intel is choosing to place so much emphasis on — and so much money into — network gear, according to a spokesman for Intel. His assessment that the Intel Developer Forum, "is becoming a place for networking" is an understatement looking at the past year of Intel network-related announcements.

Network fortification

In the second half of 1999, the company spent more than $2.15 billion to buy five companies that fortified its virtual private network, IP telephony and network management technologies. Those acquisitions included Ipivot's e-commerce management equipment, DSP Communications' wireless chipsets and software, and Parity's software for IP telephony applications.

IP telephony improvements — and Intel's contributions to the market — will be significant for large companies, says Dataquest's Martin Reynolds, because over the next few years it will bring both potential burdens and benefits to network managers.

The good news is that voice over IP will become increasingly attractive as vendors make the improvements necessary to guarantee quality of service and fully integrate voice and data onto the desktop, eliminating the need for separate PBX systems. But with that integration will come increasingly complex network systems — capable of handling voice and data efficiently. Technology from Intel and others that can simplify the maintenance and upgrades to those systems will be sorely needed.

Intel already announced it will combine its IX architecture with Nortel Network's OpenIP software for network device design.

All of this, say observers, puts Intel into the major areas of Internet-related technology important to driving and sustaining its business. Backing up the strategy will be Andy Grove, who will deliver a keynote likely focusing on the company's Internet direction. The premise to be that if the PC was the center of the universe a decade ago, the Internet has now taken its place.

Network World Fusion Managing Editor Sandra Gittlen contributed to this story.

Intel insights

Here are some of the highlights expected at this week's Intel Developer Forum:

- Communications product announcements aimed at e-commerce, including switches and load balancers.
- Announcements from several network vendors regarding support for Intel's Internet Exchange Architecture.
- A keynote from Andy Grove focusing on Intel's strategic (Internet and network) directions.

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Win 2000,

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adopters report mostly positive experiences so far on both the desktop and server. As expected, Active Directory was a chore to deploy but is producing tangible returns.

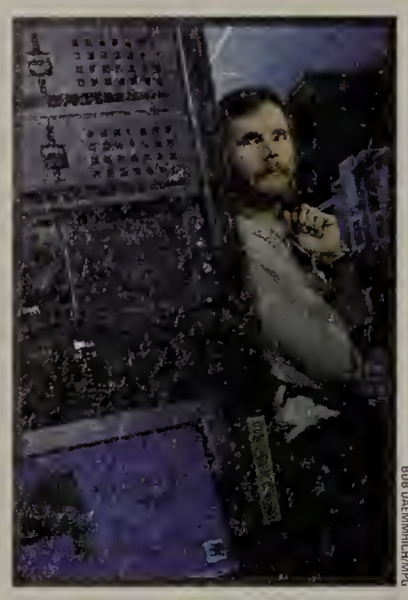
A sleeper feature has been Terminal Services, which many are using to remotely administer Win 2000. As for glitches, several have been reported, including applications and network tools that don't run on the new operating system, missing drivers and spotty integration with other operating systems.

But for HomeLife, a furniture retailer that recently broke off from Sears Roebuck and Co., and the University of Texas College of Business, Win 2000 is meeting their expectations for a more reliable and easier-to-manage server.

At the college, production deployment began last fall with beta code.

"We went out on a limb, but the products worked," says Tim Matthews, associate director for technology at the college and a self-proclaimed regular on the bleeding edge.

Matthews now supports 5,000-plus students on more than a dozen Win 2000 servers, including four machines that support a College of Business domain, two that support a universitywide domain and two that run technologies such as Dynamic Host Connection Protocol (DHCP), Domain Name System and Windows Internet Naming Service, which are used to locate network resources. The servers mainly are running prerelease Win 2000 code.



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HomeLife went out on a limb beta-testing Win 2000, but it worked, University of Texas' Tim Matthews says.

The biggest project has been the school's Home Drive, a network storage system in which students house their NT profiles and up to 200M bytes of data each. The Home Drive generates so much network traffic that Matthews held an extra server in reserve fearing the system would buckle. "We weren't sure we would get enough throughput from the operating system, but it's holding up under the load," he says.

Problems for Matthews and colleague Pat Lett, senior network analyst, have focused on missing drivers and disappearing DHCP servers — issues that Microsoft has addressed.

Active Directory also has consumed Matthews and Lett. The network professionals had to design the directory for the entire university before they could begin building their own organizational units, segments of a directory that contain information on certain users, groups and resources.

"We had domains all over the place, so we consolidated them to one domain in NT 4 before migrating to Win 2000," Lett says.

Matthews' advice: "Don't modify the Active Directory schema unless absolutely necessary." Changes to schema, which define a directory's structure, can fracture Active Directory as new organizational units are brought in.

One of the most pleasant surprises has been Terminal Server.

"I can dial in to the network, open a Terminal Server client and administer the box from any location," Matthews says. "After I make changes, I don't have to reboot the machine like with NT."

Another user's view

Terminal Server also delights HomeLife Chief Information Officer Chris Smith, who went live with Win 2000 just three days after the code was finalized.

"I always thought Terminal Server was something you used for applications you couldn't deploy on a WAN," Smith says. "But we use it to manage servers."

Smith, who is in the enviable position of starting from scratch with his network after HomeLife split off from Sears, is running 150 Win 2000 desktops and 25 servers at the company's Hoffman Heights, Ill., headquarters. Eventually, he will have some 2,600 users on more than 150 servers in 133 stores around the country, all linked over a frame relay network.

The stores will use the network to access a set of Unix-based retail applications deployed in Hoffman Heights. Forecasting and enterprise resource planning applications will run centrally on Win 2000, which also will handle file/print, messaging, and public and private Web-based applications.

Smith's biggest problems have been the absence of Microsoft's System Management Server, which has yet to be certified for Win 2000, and the fact that some of his network monitoring tools won't work with Microsoft's new software. He also says setting policies and security parameters has been a much more involved task than anticipated.

With Active Directory, HomeLife took its time to get its installation right.

"We went through several iterations and went back several times to craft [our implementation of the directory]," Smith says. With the directory domain for headquarters functioning fine, Smith will fill in other parts of the directory pertaining to regional groups and individual stores.

Smith's recommendation is to hire someone to help with the deployment or prepare for it to consume you for an extended period of time.

Matthews, at the University of Texas, recommends training all IT staff in Active Directory and Win 2000.

"And test everything in the lab," he says. "Once you go live and get Active Directory in place, making any major changes is a headache." ◪

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Merrill,

continued from page 1

Active Directory will ease administration of granting users access to specific network resources, such as bandwidth and quality-of-service (QoS) guarantees.

The firm is trying to foster a "free seating" environment, in which network services are tied to users wherever they are in the organization, not to specific devices in a fixed location, such as switches, routers and IP phones.

Merrill Lynch's plan to embrace Active Directory is part of the company's overall push to equip its 55,000 employees with an all-IP network anchored by up to 2,000 routers.

Directory-enabling this network will help Merrill Lynch launch new Web services and maintain consistency among naming, security and remote access policies. "The whole integration of policy management and Active Directory — that's where you tie in the user to the network service," says Adam Schoenfeld, director of private client architecture in Merrill Lynch's distributed systems development group.

Merrill Lynch is using Cisco's

DON TRACY/MPG

Deploying Win 2000, IP phones and Active Directory is the bellwether for future operations, Adam Schoenfeld says.

QoS Policy Manager (QPM) software to classify traffic and administer and enforce QoS policies for that traffic. But it's still a device-centric way of administering QoS policies.

Linking QPM to Active Directory will let Merrill Lynch administer QoS based on user profiles, which would couple the policy to the user — no matter where that user is — instead of to a specific Cisco device. QPM with Active Directory will ship this spring, Cisco says.

Similarly, linking Active Directory to its IP telephony infrastructure will let Merrill Lynch employees log on to the network from any phone on the company's campus and gain access to the QoS and network service privileges associated with their name.

"When we start pushing our next-generation voice services out, it's going to be a whole new ballgame," Schoenfeld says of the linkage between Cisco's IP phones and Microsoft's Active Directory.

Those next-generation voice services will be in a new, "PBX-free" campus Merrill Lynch is building in Hopewell, N.J. When that campus is completed this fall, 8,000 employees will be able to call one another over the IP network using a new release of Cisco's CallManager IP telephony software and new 7960 IP phones that feature, among other enhancements, integration with Active Directory.

This integration makes the 7960 IP phones a "user-associated device," Schoenfeld says, in which calling features are tied to the user instead of to the IP address of the physical handset. So if users with certain network-access privileges or restrictions are moving around the campus, they do not have to use a specific phone in order to

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activate those privileges or restrictions.

They log on using whatever 7960 phone they are closest to, and Active Directory will match the user's name with the IP network-access privilege policies in a Cisco policy server.

This will greatly improve the impact of moves, adds and changes, Schoenfeld says. "The costs associated with moves goes into the millions every year. It's a huge cost, and now that goes away."

The new version of CallManager can link directly to Active Directory or through a new version of Cisco's policy server that Merrill Lynch will soon be beta-testing. Linking CallManager, which provides basic call processing, signaling and connection services to packet telephony devices, to Active Directory can establish call-processing priorities for Merrill Lynch employees based on their user profile in the directory and associated service policy in the policy server.

In addition to the Active Directory links, the 7960 IP phones and CallManager software foster a more scalable IP telephony environment, Schoenfeld says. The new phones have a 100M bit/sec switched connection to a Cisco switch instead of the shared 10M bit/sec connection in earlier versions of the Cisco IP phones.

Also, CallManager software has been rearchitected to run on multiple servers, or a server cluster, which eliminates any restriction in the number of users the software can support, he says. Currently, CallManager 2.4 can support 300 or 400 phones before performance starts degrading, Schoenfeld says.

To ensure a pain-free implementation of Active Directory in its IP telephony and data network, Merrill Lynch has been testing the product in a development domain for more than a year. A few hundred developers are testing the product's capabilities and ensuring that applications will be compatible with Win 2000 and production rollout will go without a hitch.

The investment firm plans to install Win 2000 prudently. A small number of its 600 to 700 branches will get it initially, and then Merrill Lynch will gradually ramp up deployment based on the product's stability.

"By midyear, we'll have in the neighborhood of 25 branches running Win 2000," Schoenfeld says. If all goes well, 10 to 20 more branches per weekend will be migrating over, he says.

Once branches cut over to Win 2000, they'll have Active Directory stocked with network policies defined by user names. That does not mean Merrill Lynch's network will be directory-enabled — the firm will have to upgrade the versions of Cisco IOS software running on its routers and switches before it can tie them into the directory, Schoenfeld says.

The company hopes to have its network directory-enabled within the next year, depending on the performance of the new version of Cisco's policy server that Merrill Lynch will beta-test.

The new Cisco policy server will not only have links to Active Directory, it will let older Cisco gear — which may not be as policy-enabled as the newer equipment — communicate with the Microsoft directory through scripting, Merrill Lynch officials say.

The firm chose to go with Microsoft's Active Directory rather than Cisco's own Cisco Network Services/Active Directory because the Microsoft product is more tightly integrated with Win 2000, Schoenfeld says. That means the firm's Win 2000-based business applications should be more tightly integrated with the directory as well. "Deploying Windows 2000, IP phones and Active Directory for administration and service delivery is a bellwether for how we see Merrill Lynch operating in the future," Schoenfeld says.

Music,
continued from page 1

Of particular concern is Napster.com, a controversial music file-sharing and chat site that is such a bandwidth hog it has prompted several universities to block access in recent weeks. Other problematic sites include CDNow.com, an online retailer that lets users sample songs before buying music, and internetradio.com, which features links to dozens of streaming audio formats.

"About 8% of our network bandwidth is going to all the music sites," says Jeff Uslan, manager of information protection at Twentieth Century Fox, which uses Elron Software's CommandView Internet Manager to monitor employee Internet usage.

Uslan says he's seen heavy traffic to the Spinner.com online music community and RealNetworks' site for downloading audio players. While he isn't blocking music sites yet, Uslan says he chastised one employee for hogging bandwidth while listening to Internet radio on her desktop.

"It would be cheaper for us to go out and buy radios for all our employees than to increase our bandwidth for these sites," Uslan says.

Danny Daniels, manager of IS at Above Board Electronics, a San Jose fastener distributor, says he has seen some users downloading music files based on the MP3 compression format, but the files haven't created a serious bandwidth problem yet.

"Every two weeks, our music usage is doubling," says Daniels, who monitors his 65-user network with an Internet Products' iPrism content-filtering device. "At some point in time, this is going to present a big-enough problem that we will block all audio-type sites."

Popularity problem

Music is becoming a more popular 'Net application, with 40% of Internet users saying they visited a music site in the past year, according to Jupiter Communications. Much of that visiting goes on at work, where corporate PCs often come bundled with sound cards, speakers, network cards and multimedia software.

Over the past few months, net managers have begun to see the negative impact that music Web sites and the sharing of music files — which can range in size from 5M to 8M bytes — can have on the performance of Internet connections, LANs and individual desktops.

"Companies are seeing a lot more downloads over the Internet, including music files, video clips and large graphic files," says Stephen Elliot, a Gartner Group analyst who follows network and system management software. "But network managers are so busy, their solution is often to increase bandwidth rather than to filter out certain sites."

Elliot warns that corporations need to be aware of the legal liabilities they face with music files in particular because many are pirated and do not meet copyright laws.

"Companies need to be careful about illegal MP3s," he says.

Higher-learning crackdown

It was a combination of concern about bandwidth problems and legal liabilities that led several universities — including Northwestern University, Hofstra University, Oregon State University, Ohio State University and the University of Illinois — to block Napster.com.

Napster.com is unique because it lets users share their collections of MP3 files and download music from each other rather than from a central server. When end users download Napster.com client software, they turn their PCs into Napster.com servers from which they serve up MP3 files to other users (see graphic, left).

The site makes it extremely easy to find digital songs and directly link to the person with that MP3 file. However, as Napster.com grew in popularity on campuses, it became a bandwidth drain for Internet connections and LANs.

"We found at least 75 Napster.com servers on campus, and there were probably many more than that," says Lanny Udey, associate dean for learning and IT at Hofstra. "Because of the way the application works, they were stealing our bandwidth."

So in November, Hofstra blocked the Napster.com site — the first and only Internet site it has blocked.

"We don't have a complaint about people downloading legitimate MP3 files. We have a problem with our users running unauthorized servers," Udey says, adding that "most of the users didn't know they were serving up the files."

At Northwestern, Napster.com was eating up 20% to 30% of the bandwidth on the university's 622M bit/sec backbone network.

"We tried dealing with it by contacting the students involved, but it was like putting your finger in the dike," says Roger Safian, Northwestern's information security coordinator. "We couldn't do it fast enough, so we had to deal with it at the source."

Safian says he finally blocked all Napster.com addresses at the network's routers in December. So far, reaction on campus has been OK. "Everyone sees that the network seems peppier," he says.

Oregon State, which was one of the first universities to block Napster.com, in October, is using the publicity surrounding that unpopular decision to begin a discussion with students and faculty about appropriate use of the university's network.

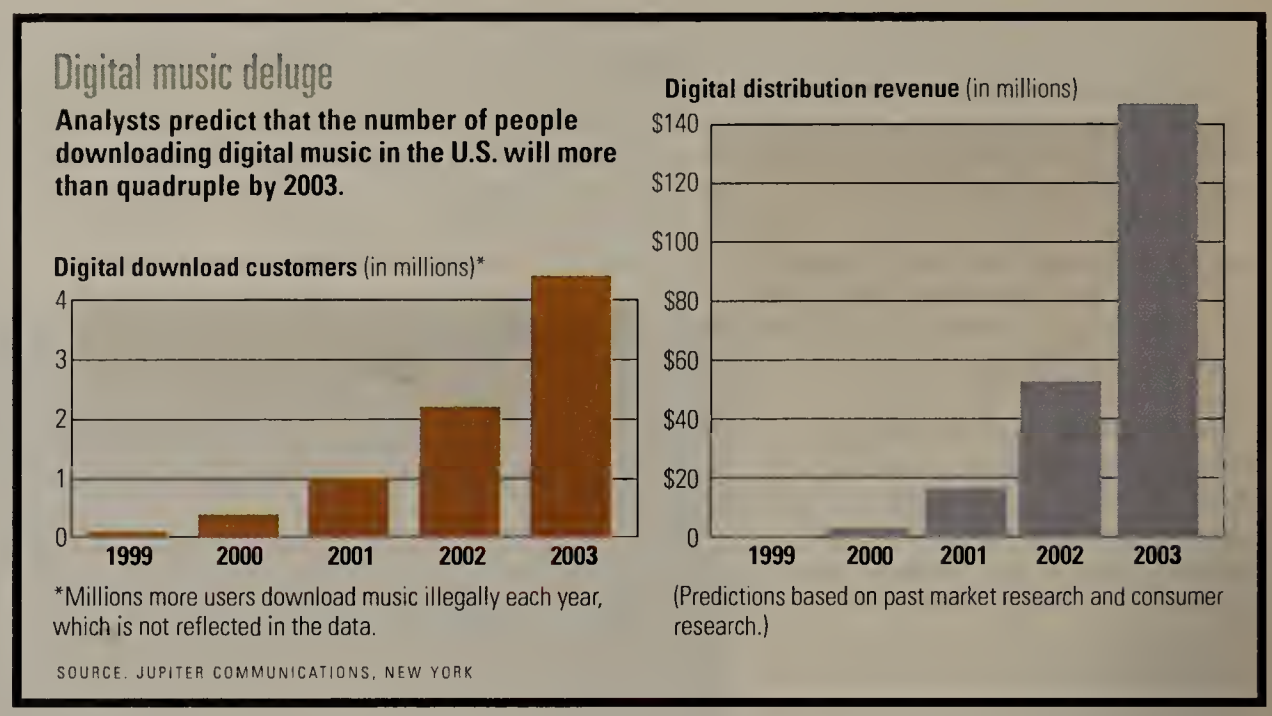
"We don't have enough budget dollars to increase our bandwidth every 90 days," says Curt Pederson, vice provost for information services. "I'm discouraging faculty from listening to the radio or talk shows over the Internet or running stock tickers. . . . I've even stopped checking my own stocks during my lunch hour."

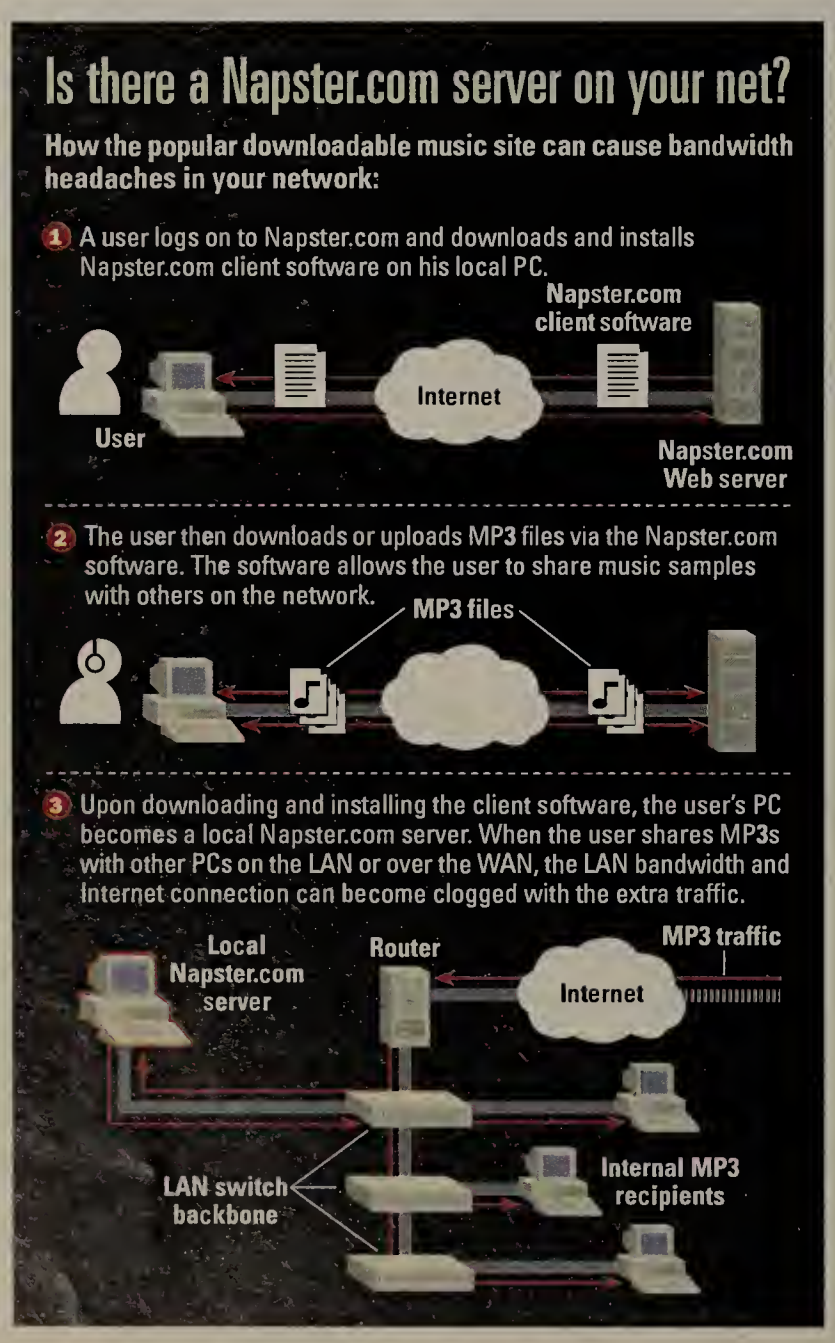
Several options

Corporations interested in blocking music Web sites such as Napster.com have several options, including cutting off access at the router or firewall, asking their ISPs to block certain sites or using an Internet content-filtering product.

Officials at Applied Theory, a New York ISP that blocked Napster.com for Hofstra, say companies should keep a close eye on music sites because they can cause sudden traffic spikes. In particular, companies with T-1s or fractional T-1s need to be careful.

"These sites can have a large impact really quickly," says Bob Riley, director of product development at Applied Theory. "With Napster.com, you can set it up to download a whole bunch of files and then go to lunch. In most cases, the end users have no idea what that's doing to your network." ◪





Backspin

An open letter to an executive

Dear <uninformed executive>,

I thought it about time that I explained the realities of software development to you. No, I do not want to turn you into a programmer or even enable you to read code — I want you to get a clue.

My reason for actually trying to educate you is that you are getting on my nerves, and rather than explain this topic to you a dozen more times in the next week, I thought I'd put the concepts down on paper in black and white so that hopefully you can understand and believe them.

Now my problem with your understanding of how software is built comes from the fact that while we all wanted to get the system out as fast as possible, you haven't grasped the ground rules.

MARK GIBBS

I think, though, that the only way I could have made the ground rules clearer would have been by nailing them to your forehead. (Do let me know if this would, indeed, work better for you.)

The ground rules were, and are, simple: We entered the project with minimal design documents as we didn't have time to research the project, identify technical strategies, plan the whole development process, etc. We knew that the feature set was in flux and that the first release would be perhaps 70% of what we wanted, and that we'd get the rest of the features in subsequent releases.

We also knew that we had left little time for slippage caused by implementation problems. This meant that whenever we agreed to add to the feature set or fell over a stumbling block on the road to glory, we would pay for it by either having to drop or at least pare down another feature or slip the schedule even more.

Now what part of that list of rules didn't you understand?

So here we are, in the home stretch to release, and you're getting all bent out of shape over the delays and the feature set. But the thing you're doing that is really chapping my *** is saying things that make no sense in an effort to feel like you are in control.

For example, you trotted out the line: "We should go for modular development." This is where your lack of knowledge shines like a beacon for all numb nuts everywhere. I mean, do you understand what building a complex client/server system involves? That is, apart from cola and pizzas?

Building a software system is like constructing a house. If you build the house without plans, you're likely to have a problem unless you have incredibly skilled builders on the task. (We're lucky; we do.)

But that's not all — oh no, not by a long shot. You talk about "modular development" and ask repeatedly why can't we just leave out a feature or two to meet the deadline?

Let me give you a metaphor: If you build a house and decide to move an internal wall, you would expect there to be a good chance that something else would fall down. And if you left off the roof, the place would fill with water. And that's how it is with software, only more so!

Leave parts out of a system of software components and the whole house of cards is likely to collapse. You see, most parts of a complex piece of software are dependent on the data and control handed over by other components. Take away one component or simply change that part too much, and the whole mess collapses.

We're doing the best we can, which is better than any of us would have ever dreamed possible. Anything you do that takes our eyes off the ball will have serious consequence, least of which is that I will quite possibly strangle you.

So before you start making your ridiculous suggestions, just ask a few questions first and get involved in what we're creating. Then get real and get a clue.

Yours,

<your_name>

Form letters to mrcolumn@gibbs.com.

'NET BUZZ

The latest on the Internet/intranet industry

PAUL MCNAMARA

Watching a start-up's product demonstration is like interviewing a young job candidate: You find that any chucklehead can look good for 10 minutes.

Keeping that in mind, the **Demo 2000** show last week in Palm Springs, Calif., still provided an impressive parade of 81 fledgling companies . . . including a handful that had better keep fresh resumes handy. Here's a taste of the good and the bad:

Want to see your Web site as others do? Ditch the rose-colored glasses and check out **Vividence,** which showed off a suite of site analysis services that can be applied not only against your own site to determine what's working and what's not, but also against the sites of competitors. (Warning: The results may cause nausea.) With early customers including **Excite@home, drugstore.com and AltaVista,** Vividence uses an army of 85,000 registered testers to build highly detailed reports and recommendations. Backers include **Kleiner, Perkins, Caufield & Byers.**

Wouldn't life be a bowl of cherries if we could use our Web browsers to make a restaurant reservation or an appointment with the dentist, mechanic or masseuse? (Hey, we're in Palm Springs.) Wouldn't such service providers — and any business that sells time — reap the benefits of increased customer satisfaction that such a reservation system would provide? **Xtime** believes so, and while this start-up isn't the first to pitch an online reservation system, its full-featured application appears capable of gaining a foothold.

Here's a business plan that might make money for more than just a few entrepreneurs: **Half.com** bills itself as a cross between eBay and Amazon.com. Customers use the site to sell and buy previously owned mass-produced items — books, CDs, electronics, whatever — that carry a universal product code. Type in the number on an item and Half.com taps its enormous database of UPC information to post your item for sale. The price must be half or less of its original cost. There's no bidding involved. The buyer pays shipping costs. Cancel that garage sale.

The advice sites were out in force: **AdviceAmerica.com, Keen.com, GetFit.com, and TheLawPlus.com,** which featured a live cameo from Dr. Koop wannabe **Ed Koch,** the TV judge and former New York mayor. Take my advice: Check 'em out soon; they won't be around long.

A few quickies: A $300 Internet radio from **Kerbango** will be tucked under many a 'Net Head's Christmas tree this year. And a cool search site called **MongoMusic** will help audiophiles find new gems. A standalone digital picture frame called **StoryBox** — from **Weave Innovations** — may solve the problem of what to buy your parents. PDA junkies will get a kick out of **Handspring's** new **Visor** plug-ins, one of which turns the Palm-like device into a digital camera. Although reportedly old hat in Europe, the crowd went bonkers when TeleVend demonstrated its soda machine that spits out cans at the command of a wireless phone call and applies the charge to your phone bill or credit card.

Perhaps the most bizarre dot.com scheme discussed at Demo: **Idealab's makeanoffer.com,** which, among other things, promises to bring the bids of prospective homebuyers to your attention even if you have not put your house up for sale . . . or even thought about doing so. Makeanoffer.com drew laughs, and not in a good way. Of course, Idealab's **Bill Gross** has confounded the skeptics before.

One more anecdote: In his talk entitled "The View From Redmond," Microsoft Vice President of Developer Relations **Tod Nielsen** had attendees rolling in the aisles with a pair of off-color jokes . . . one so off-color it couldn't be repeated in a family trade publication.

The jokes were funny, but raised two questions: Would such risqué "ice-breakers" be welcome at a company meeting back in Redmond? And is stooping to that level what it takes for a Microsoft guy to win over a crowd these days?

Send Internet news tips and requests for the jokes to buzz@nwfusion.com.

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